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OUTLOOK '83

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January 1983

These published proceedings of the U.S. Department of Agriculture's 59th annual Agricultural Outlook Conference contain all papers submitted for publication by those who participated in the program. Outlook '83 took place November 29-December 1, 1982 in Washington, D.C. and drew more than 1,200 people to its 35 sessions.

This is the first year that a user fee was assessed for the Proceedings. I want to thank you for your acceptance of this practice and assure you that we will keep the sum charged as low as possible in years to come.

All those who receive this publication by mail will be sent preliminary information about next year's Outlook Conference in mid-August. Please note that the dates for Outlook '84 have been changed; the new dates are October 31-November 3, 1983.

Thank you for your interest in USDA and the annual Outlook Conferences.

Best wishes for the new year.

James R. Donald

JAMES R. DONALD

Chairman

Steering Committee

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Good afternoon . . . I'm glad to see all of you here today. It's a pleasure to welcome you to the 59th annual Agricultural Outlook Conference. Whether you're a newcomer or a veteran at these conferences, I'm certain you will find this to be one of the most informative and important single events the Department sponsors.

In 1923, when the Department planned its first Outlook Conference, the main purpose was to provide a way to get economic research findings to the American farmer. It was not aimed at formulating an agricultural program. Instead, it was designed to draw a picture of conditions with respect to probable supply and demand throughout the competing area. In other words, farmers were not to be told what to do. They were to be given the facts so that they could apply their own genius.

While the purpose of this conference has not changed during the previous 58 sessions, the sophistication of our techniques and methods for gathering and distributing information has changed dramatically.

With this in mind, I'd like to draw your attention to the electronic technology exhibit that will be displayed in our patio area. You can read about the display in your program booklet . . . and I sincerely hope you take time to view the exhibit. Our goal in the Department, as we function in this fast-paced world, is to gather and distribute important information as quickly as possible. Electronic technology has become an essential part of our operation, and it will play a greater role in the future.

I realize that this conference will focus on the broad scope of our great agricultural system, and I'm certain you will receive a valuable supply of information -- regardless of your interests.

But right now I want to focus on one particular situation -- one that has emerged to plague a great many people in agriculture. The problem is that we simply have more product than we can consume in some commodities. The problem is crystal clear, but the solutions are not always easy to see. Let's look at some history first.

You may remember the early 1970s when large supplies and huge carry-overs were depressing farm prices. But then look what happened. Activity throughout the world turned the American agriculture situation upside down.

We saw a period of adverse weather around the world. We saw a surge in food purchases by Japan and Europe. Economies were expanding around the world, and a decline in the value of the U.S. dollar made our products easier to buy with foreign currencies. By the fall of 1974, our Secretary of Agriculture was addressing worldwide food shortages at the World Food Conference in Rome.

An era of opportunity embraced us. Farm exports went from \$6.7 billion in fiscal 1970 to \$40.5 billion in 1980. We capitalized for this new demand. Purchases of farm machinery and fertilizer rose dramatically. Non-real estate farm debts almost tripled during the '70s, as did borrowed investment in agriculture. These increases, of course, were not all from expansion. They reflected the painful bite of inflation.

Still, the agricultural machine was greased, fueled and ready to roll. Between 1969 and 1979 we boosted grain production from 205 million metric tons to 303 million -- a 48 percent increase. About 18 million metric tons of this additional production was absorbed domestically. Five million went into carry-over. The remaining 75 million hit the export market.

This activity was paying off. Net farm income went from \$14.3 billion in 1969 to \$32.3 billion in 1979. Cash receipts jumped from \$48 billion to \$132 billion.

It was a tremendous decade! As agriculture rolled into the 80s, it anticipated more opportunity. But even as these events were happening, irresponsible fiscal policies in Washington were digging the valley that agriculture would eventually fall into.

Then, on January 4, 1980, the first solid blow came. President Carter embargoed grain shipments to the Soviet Union! Suddenly our 70 percent share of that market sank to 30 percent. But grain exports to the Soviets were doubled by Canada, tripled by Australia, quadrupled by Argentina, and the Common Market tripled its Soviet exports of farm products. Many have locked in the increases with new long-term agreements.

A lot of other things happened. Inflation, interest rates, taxes and government spending soared. Housing starts, industrial output, private investments and the purchasing power all sank. The U.S. economy was seriously ill. This weakened the U.S. domestic market for farm products -- which is farmers' No. 1 market.

The purchasing power of net farm income plunged 45 percent in 1980 -- the lowest in 48 years. On top of that we had two excellent U.S. growing seasons.

Meanwhile, the expansionist economies of the 1970s around the world also sank into recession. These developments weakened demand for U.S. farm products. And a stronger dollar in international markets also slowed our volume of farm exports.

The economy was not our only problem. Another was a tendency toward restrictive trade policies. Japan, though is a good customer, discriminates against items like beef and citrus. And the European Common Market started building a trade wall around its 10-member countries 20 years ago. They went from a net importer of 20 million metric tons of grain per year in the 1960s, to a net grain exporter by 1980. Now it is subsidizing its excess production into exports that compete with American farmers.

All of these events have taken agriculture to a crossroads. We have to take a hard look at our situation during this Outlook. Then we must come up with improved solutions. We have to look at what farmers can do, and what the Federal government can do.

Farmers can help their own situation by concentrating on marketing possibilities: Forward selling, hitting seasonal peaks, more direct selling. They can cut costs with conservation tillage and other energy savings. Farmers can also reduce acreage through the voluntary government programs and use the loan to get past harvest gluts, meet expenses and ride out temporary excess supply.

Now let's look at how government can clear the road for farmers.

Since the farmers' No. 1 market is domestic, the condition of that market depends on the strength of the economy. The first priority of government is to help build and maintain a sound and expanding job-making economy.

We have made a good start in the last 22 months. The 1980 inflation rate of 13-1/2 percent has been cut to about five percent. The prime interest rate of 20 percent or more in 1980 has been cut to 12 percent.

As for exports, the rules of international trading are set by governments. Our government has a responsibility to keep international agricultural markets competitive; to free up trade restrictions; and to counteract subsidized exports that threaten our farmers. When we are not successful, then we need to fight fire with fire.

Government must also maintain our creditability as reliable suppliers. That's why this Administration has a strong policy to support farm exports. It can also provide farmers the tools to make temporary economic adjustments, such as by reducing production. We announced the 1983 farm commodity programs early. They are voluntary, and we fully expect that many more farmers will be using them in 1983.

Government can offer loans on crops to carry farmers over harvest and times of unusual production. It can help farmers ensure against natural risk with crop insurance programs. We have it in place and we're continuing to improve it.

The Farmers Home Administration is working closely with the American banking community and the Farm Credit System to help farmers find operating credit. In fiscal 1982, the Farmers Home Administration shared with private lenders in participation lending for 30,000 loans. That was nearly double the participation loans the year before.

Still, more has to be done. But let me conclude by saying that I am optimistic about the future. First, American agriculture is more efficient than most any other U.S. industry. We are more efficient than the agriculture in other countries, and we are competitive.

Second, we are in a growth market. Our potential market -- the human population -- is growing around the world. And the very first priority of a growing, enlightened population is food and clothing. And that's not going to change.

The only thing that is going to change will be agriculture itself, turning the 1980s around and making them profitable. We know what our problems are; we know the mistakes we should avoid. We're going to be aggressive . . . and we're going to get the job done. Thank-you.

#

The Economic Outlook
and
The Effect of Budget Deficits on American Agriculture
Martin Feldstein*

I am very pleased to be here with you today. Since I joined the Administration two months ago, one of my many pleasant experiences has been getting to know Jack Block and working with him on some of the issues that are of critical interest to American agriculture, especially on the problem of agricultural exports. I'll have more to say about that subject in a little while. But first I want to comment more generally on the outlook for the American economy.

The Economic Outlook

I can summarize my view by saying that the economy is still relatively weak but that the favorable signs of an upcoming recovery are getting stronger all the time. The most recent data that we have about most aspects of the economy relate to October. These figures generally show that the level of economic activity in October was below that of September. There were declines in industrial production, in employment, and in real average weekly earnings. The unemployment rate rose three-tenths of a percent to 10.4 percent.

* Chairman, Council of Economic Advisers. These remarks were prepared for presentation at the Annual Outlook Conference of the Department of Agriculture.

There have, however, also been several indications that business is improving. The number of housing starts was up again in October and is now running 30 percent above the level of a year ago. The number of housing permits is up even more sharply, having jumped 33 percent since August. (I might just note parenthetically that all the figures that I'll refer to today are seasonally adjusted data.)

Automobile sales have also been rising significantly, with the level of sales in the first three weeks of November significantly above that of earlier months this year. This reflects increasing consumer confidence and lower financing costs.

Looking to the future, there is every reason to think that the economy is now ready to recover. The index of leading indicators, a statistical index that summarizes 12 measures that generally turn up before production and employment begin to rise, has increased in five of the last six available months. It is not surprising that virtually every private forecaster expects that economic activity will be stronger in 1983 than in 1982. The monthly survey of 43 leading private forecasters that was done earlier this month found every one of them predicting a higher level of GNP in 1983 than in 1982, with the average of these forecasts

calling for a GNP rise of 3.1 percentage points between 1982 and 1983.

One of the principal reasons for optimism that the economy is now headed for a recovery is the substantial fall in interest rates during the past few months. It is customary for a decline in inflation to induce a decline in interest rates with something of a lag, and the current period of disinflation has been no exception. Although inflation began to decline last year, interest rates remained high. By June of 1982, the 6 month commercial paper rate was only one percentage point below its average in 1981 and long-term rates were actually higher in June of 1982 than they had been in 1981.

The past five months have seen a sharp decline in interest rates. The commercial paper rate has dropped from 13.8 percent to 8.8 percent. The prime rate is down from 16 1/2 percent to 11 1/2 percent. Long-term rates have also declined substantially. The current corporate Aaa bond yield of 11.7 percent is about three percentage points below the 14.8 percent level of June. The home mortgage commitment rate has also declined sharply, from 16.7 percent in June to less than 14 percent now.

The economy's natural tendency to recovery will be reinforced by the monetary and tax policies that are now in

place. Probably the best gauge of monetary policy is now the behavior of the real value of the broad measure of the money supply known as M2. In the current year the real value of the money stock has been increasing at an annual rate of 4.6 percent. Last year the real value of the money stock actually declined somewhat. A positive real growth of the money stock is a key precondition for real economic growth and is therefore one of the basic leading indicators of economic activity.

I should hasten to add that this increased growth of the real money stock is not the result of any switch in the Fed's monetary policy. The Fed has continued to follow a policy of gradually decreasing the size of the nominal money supply. The level of M2 increased ten percent in 1981 and has grown at a rate of 9.6 percent this year. But the sharp decline in inflation between 1981 and 1982 has turned this relatively constant growth of the nominal money supply into a significant increase in real money balances.

A further source of stimulus to the economic recovery in the year ahead will be the decline in taxes. For many years now, inflation has been pushing families into higher tax brackets and forcing them to pay a higher share of their income in taxes. That was reversed in 1982. A middle-income family that had the same real income in 1982

as in 1981 saw its real federal income tax liability fall by about six percent. The same thing is likely to happen next year, with the 1983 real tax liability more than 6 percent below the 1982 level. In the aggregate, the Treasury's total tax receipts are likely to be about six percent lower in real terms in 1983 than they were in the 1982 fiscal year.

These changes in interest rates, taxes and real money growth take time to work but they do provide a foundation for economic recovery. It is, of course, difficult to predict the near-term outlook, especially at a time like this when the economy is presumably near a turning point. But I do agree with the broad consensus of private forecasters that real GNP and the level of economic activity will be higher in 1983 than in 1982.

Economic recovery need not be accompanied by a new round of rising inflation. There is now substantial slack in the economy and many firms are in a good position to increase output without raising prices. It is extremely important to avoid overheating the economy as it enters the recovery. Experience has shown that attempts to fine-tune a recovery are often self-defeating. The use of expansionary monetary and fiscal policies to accelerate a recovery has frequently caused an increased rate of inflation or a

short-lived recovery. I certainly hope that the very high price in unemployment and lost output that has accompanied this decline in inflation will deter future governments and monetary authorities from pursuing policies that might rekindle the inflationary spiral. I am confident that this Administration will exercise appropriate caution and I believe that the Federal Reserve will also persist in its policy of aiming for a level of nominal GNP that is consistent with a gradual reduction of the underlying rate of inflation.

I know that the combination of an economic recovery, declining inflation and lower interest rates will be very much welcomed by American farmers as it will be by everyone else. There is, however, a major problem that now threatens the American economy in general and our farmers in particular. That problem is the very large potential deficits that now loom ahead of us.

Budget Deficits

A large cloud will hang over the agricultural sector unless Congress and the Administration work together to take the dramatic steps necessary to reduce the deficits now projected for 1984 and later years. Let me explain why deficits would have such a dire effect on agricultural sales and farm incomes.

The basic reason is that American agriculture depends on exports and that large budget deficits would hurt our nation's ability to export. I know that I don't have to tell you about the importance of exporting for the American farmer. Last year agricultural exports exceeded \$40 billion and accounted for more than thirty percent of total agricultural sales. For some crops, the export share is very much larger. The size and shape of American agriculture today can continue and prosper only if our nation's ability to export is maintained and enhanced.

Budget deficits directly impede our export potential. A budget deficit means that the government is competing with private borrowers for available savings. This extra demand for credit causes the real interest rate to rise. A higher real interest rate attracts funds from abroad and this potential inflow of capital causes the exchange rate to rise. The stronger dollar weakens the competitive position of U.S. exports in the world economy. In short, budget deficits mean higher real interest rates and a stronger dollar. This raises the cost of U.S. farm products to buyers in other nations and therefore reduces their demand for our agricultural exports.

There is another way to see why budget deficits hurt our exports. Budget deficits must be financed and some of

that financing comes from abroad. But an increased capital inflow from abroad means that there must also be an increased net inflow of goods and services from abroad. That is a basic fact that is reflected in our national income accounts: the net balance on the capital account must equal the net balance on the current account. Or, to put it differently, borrowing from abroad only transfers resources if there are more imports or less exports or both.

During the past two years our high real interest rates have contributed to an unusual strengthening of the dollar relative to other currencies. Since 1980, the German mark has increased nearly 50 percent when account is taken of differences in the rates of domestic inflation in the two countries. The story is similar for the French franc and the Japanese yen. The high real interest rates that contributed to the stronger dollar over this period were associated with the declining rate of inflation. In the future, however, the real interest rate will be kept high unless the large potential budget deficits are avoided..

Total merchandise exports of the United States have declined significantly during the past two years. Merchandise exports were \$61 billion in the first quarter of 1981 but less than \$52 billion by the third quarter of this year, a drop of 15 percent. Since total export prices were

rising over this period, the decline in the real volume of exports was even greater. During the same period agricultural exports declined by an even greater percentage, with a much greater decline in the export of grains.

The third quarter of 1982 saw a merchandise trade deficit of more than \$13 billion, the largest quarterly deficit in the postwar period. Experts now forecast that the 1983 merchandise trade deficit will be about \$75 billion or more than twice the previous record level. Some of this enlarged deficit will reflect increased imports but much of it will be the result of reduced exports. Agriculture will inevitably bear its share of any such decline in exports.

A sharp decline in our exports and increase in our imports would also be likely to exacerbate the rising pressure for protectionist measures. We already see the spectre of protectionism in the political rhetoric and in the measures introduced in Congress. It is crucial to bear in mind that domestic content rules for automobiles and other policies to protect U.S. markets at home would almost surely be met by increased protection of domestic markets by other countries.

An increase in protectionism and a decline in world trade can only hurt U.S. farmers. I am well aware of the problems that our farmers already face in selling abroad,

especially in competition with the heavily subsidized exports of the European community. But our farmers still export far more than we import of agricultural products. Last year there were more than two and a half dollars of agricultural exports for every dollar of agricultural imports. There can be no doubt that the U.S. farmer would be one of the major losers if there is a decline in world trade.

In short, large budget deficits in future years would hurt agriculture directly by raising the value of the dollar and indirectly by contributing to the risk of U.S. policies that induce protectionist barriers abroad. A healthy recovery for American agriculture requires shrinking dramatically the potential deficits that now loom ahead.

Projected Deficits

What are the prospects for getting the deficit under control and shrinking its value to zero?

The budget outlook for the 1983 fiscal year that began last month is not at all good. Although we are still waiting for Congress to pass some remaining appropriation bills, the budget for the current fiscal year is more or less fixed. While I cannot quote the Administration's precise forecast to you, I can tell you that a number of

private estimates have placed the likely deficit at between \$150 billion and \$200 billion. A deficit of even \$150 billion would represent more than four and a half percent of GNP, a larger share than in any previous year.

Let me emphasize that although the fiscal year 1983 deficit is now essentially beyond our control, the deficits in future years can be and must be reduced. At this time, the deficit projections for 1984 and beyond are only estimates of the implication of continuing with the status quo -- that is, with the nondefense outlays and taxes implied by current law and with the future defense outlays previously projected by the Administration.

We in the Administration are now hard at work on the changes from the status quo that will be in the budget that President Reagan will present to Congress in January. The President himself has been spending many hours in the past few weeks working on the budget. Although I cannot describe the details of our budget discussions, I can tell you that there are no easy answers. We will have to make difficult and unpleasant decisions. Moreover, we will need the help and the cooperation of the Congress in this critical task.

Although the problems that we face are severe, I am cautiously optimistic that we will succeed. I believe that we can gradually eliminate the deficit and that we can do so

without violating the widely shared goals of protecting the poor, limiting the burden of distortionary taxation, and strengthening our military security.

If we do succeed in reducing and eventually eliminating the deficit, the 1980s can be a decade of unusual prosperity. The past two years have already seen inflation decline from more than 10 percent to less than 6 percent. The cloud of inflation should continue to recede on the horizon. The economy is now ready to recover and the recovery can be accompanied by falling inflation and rising employment. The combination of low deficits and the tax incentives that we have provided for increased saving and investment can cause a more rapid growth of the capital stock and therefore of productivity and well-being.

The key problem that the economy as a whole faces in the years ahead is getting the budget deficit under control and eliminated as rapidly as possible. Failure to do so will be particularly damaging to American agriculture. With your help, and with the help of others who recognize the importance of reducing the deficit, I think we can succeed in overcoming the forces of inertia and self-interest. I hope that in the months ahead you will contribute your energy to this urgent task.

Alan T. Tracy, Deputy Under Secretary
International Affairs and Commodity Programs, USDA

1983 Agricultural Outlook Conference, Session #5
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In any discussion of the outlook for U.S. trade, you have to start with the current setting, which is one of tremendous surpluses, weak demand and, therefore, low farm prices.

We are looking at a likely carryover of more than 147 million tons of grain at the end of this marketing year. That's more than double what it was 2 years ago.

Meanwhile, we are experiencing weak demand from our overseas customers. U.S. agricultural exports in the fiscal year just ended were valued at \$39.1 billion, down 11 percent from the record of \$43.8 billion in fiscal 1981.

Lower prices for major commodities accounted for most of the total value decline; a depressed global economy, increased grain supplies in the United States as well as in some major importing countries, an appreciated U.S. dollar and foreign exchange constraints limited exports, especially for corn.

In addition, U.S. farm income is down despite huge outlays for domestic farm programs.

Many of the problems that plagued us in fiscal 1982 unfortunately will not go away in fiscal 1983. Lagging economic activity in many countries and only slight expansion in livestock feed requirements continue to weaken global use of agricultural products. Financial constraints facing several importers will continue to be a problem. The dollar continues to be strong, limiting potential expansion in foreign use of U.S. agricultural products despite lower U.S. prices.

Farm exports most likely will not be up in fiscal 1983. They could dip to \$37.5 billion.

Weak demand for crops and large supplies point to a significant 1982/83 buildup in world grain, soybean and cotton stocks. Most of this will be in the United States.

Some of the problems we are facing are of our own making. Others are the result of the actions of our competitors.

One of our greatest problems right now is that we have more product around than we can use. The farmer-held grain reserve is bulging. We grew roughly one-third of the world's feed grains this year but we will probably hold close to three-fourths of the world's carryover at the end of the 1982/83 crop year. The buildup in supplies extends to almost every commodity category.

While our supplies are building up at an alarming pace, recession has hit many of our customers. Several countries have slipped into severe financial distress--Poland, Mexico, Romania, Brazil, Peru, Bolivia and other nations. These developments weaken the demand for U.S. farm products as these and other countries are less able to come up with the funds to import agricultural products.

The dollar has appreciated to record levels against certain major convertible currencies, such as the French franc, the Italian lire, and the British pound. This is a sign of increased confidence overseas in the U.S. economy. However, it also means that foreign importers must pay much more in terms of their currencies to purchase a given volume of U.S. farm products. Even though the dollar price of U.S. wheat declined, its price to many foreign buyers in their currencies increased by 35 percent over the past 2 years.

The worldwide tendency toward restrictive trade policies continues to affect us. Two particular problems are Japan and the European Community. Japan is the largest single-country market for U.S. agricultural products, taking about \$5.7 billion worth in fiscal 1982. Japan may be a good customer of ours, but it does severely restrict our exports of beef, citrus, and many other products--mostly of the high-value type.

We met with Japan in Honolulu October 20 to initiate discussions that we had hoped would lead to full liberalization of the Japanese market for U.S. beef and citrus. However, the United States broke off talks when it became apparent that Japan was not prepared to offer anything on beef and citrus, products of great potential if we could get free access to the market. We will resume negotiations when there is a better chance of success.

In the meantime, we continue to stress to Japanese officials that agricultural trade liberalization will not damage Japan's agricultural sector, rather that it will make it more efficient and viable in the long run. And we will continue to try to convince policymakers and planners there that agricultural imports must be broadened and that, as a result, farmers both in Japan and in the United States will benefit.

If Japan wants continued free access to U.S. industrial markets, it will need its friends here in U.S. agriculture. It is only fair for them to grant access to products that we produce efficiently.

The EC, on the other hand, started building a trade wall around its member countries 20 years ago. The EC went from being a net importer of grain in the 1960s to a net grain exporter in 1980. The method they have chosen to deal with surplus is to subsidize their excess production. They are subsidizing excess production into exports that compete with American farmers. Our farmers, unfortunately, have been forced to compete against the treasuries of European capitals.

During 1976-80, EC dairy exports tripled; sugar and wheat exports doubled; meat exports increased until the point where the EC is now the second largest beef exporter in the world; and the EC went from the world's largest poultry importer a few years ago to become the world's largest poultry exporter, with 35 percent of the world market, built on export subsidies.

The question is what are we going to do about it?

The U.S. position has been that we are willing and eager to negotiate on these issues--to play by the international trading rules of the General Agreement on Tariffs and Trade (GATT). But at the same time, the United States is not prepared to let its agricultural trade go by default; if negotiation fails, we will defend our trading rights by whatever means are necessary. The EC must recognize that export subsidies are wrong and take steps to eliminate them. Failure to do this will eventually lead to severe trade problems in the near future.

The message was repeated last week at the GATT Ministerial meeting in Geneva. We intend to stand up for U.S. agricultural interests and do whatever is required to bring about a more responsible attitude on trade from our trading partners.

As Secretary Block told a meeting of the U.S. Agricultural Export Development Council two weeks ago: "They have to be realistic and realize that we do have ammunition on our side if we need to use it. We are not without firepower. We can fire if we have to."

The blended credit program, in which direct interest-free export credit and credit guarantees are used to produce lower interest rates for exports, might be termed a shot across the bow of those who are plunging toward greater protectionism and increased subsidization.

The positive response of importing countries to this program has got the attention of the Community and others, and we are studying options for further use of the limited funds available to help restore the concept of equity in agricultural trade.

It is apparent in dealing with this and other problems facing U.S. agriculture--whether they be domestic or international--that we may have to consider some dramatic and drastic measures that are radical departures from the past. And there are some fundamentals we should keep in mind when making trade policy decisions. These include:

- Government warehouses are not a market for farm commodities;
- Strict acreage and marketing controls should not become franchises for other nations to produce;
- A government that interferes with a free and competitive market interferes with long-term adjustments and hurts the industry and international trade;
- Farm programs that attempt to make farming profitable for everyone create overproduction, which eventually makes farming unprofitable for everyone;

--A guaranteed price that removes risk creates more production than the same price level arrived at on the open market--and encourages excess production. The dairy surplus was caused by support levels that sent signals to dairymen to produce more than the commercial market would take;

--U.S. government support programs cannot ignore international commodity markets for very long or else they may place an umbrella over foreign competition and encourage foreign production, especially when the U.S. dollar is strong;

--The government cannot continue to cut crop production to boost international prices or else it will end up supplying the acreage reduction for the world while others increase their acreage.

What are our alternatives?

We could maintain the status quo and watch our competitors edge us out of even more markets. This is not acceptable. Our farmers depend on exports and it is our job to make sure those markets are there for them.

We could join our competitors in their subsidies and other restrictive trade practices. But we do not believe in such distortions in the marketplace. They only end up making exporting more expensive and no one benefits. But we may be forced to turn to short-term subsidies for our own agricultural products or to take other actions if European, South American, and other nations do not heed our warning.

Or we could work to make our competitors more price responsible. To us, that is by far the best long-term solution. But it will take time, creativity and initiative. Farm policies do not change overnight.

In the meanwhile, we do not intend to just stand back and let our markets erode away. There are some measures we can use.

Market development

I mentioned blended credit, the 3-year, \$1.5 billion "blended credit" program announced by Secretary Block on October 20 to expand exports of U.S. agricultural products. These new export credits, being offered principally to developing countries, are directed toward long-term market growth as well as immediate export gains. As of last week, blended credit totaling \$440 million had been approved for seven countries, to be used to import more than 2 million tons of U.S. wheat and respectable quantities of U.S. corn, vegetable oil, soybean meal and cotton.

We allocated \$100 million of the \$175 million-\$190 million provided for agricultural export expansion in the Omnibus Budget Reconciliation Act for the first year of blended credit, and that is almost gone.

We are studying ways to use the remainder of the Omnibus funds, with the view to getting the most in export growth from each dollar spent.

We recognize that the first step in restoring farm prosperity must be a sound domestic economy based on control of the federal budget. We do not believe the United States can spend its way to agricultural trade recovery, but we do believe we can make better and more effective use of the funds we have.

We have sent government-industry sales teams to 23 countries as one example. We have developed a pinpoint planning system for the use of market development funds as another. We will open a new U.S. Agricultural Trade Office in Saudi Arabia next year, bringing the number of those offices to 11. We have opened wheat, feed grain, and soybean market development cooperator offices in China.

And we are giving new emphasis to the export of high-value products, already worth \$12-13 billion a year. Semi-processed products such as flour and meals figure importantly in the high-value group.

In the next 10 years, world trade in high-value products is projected to rise from the current \$120 billion to between \$310 billion and \$440 billion. The size of this potential increase clearly indicates the opportunity for U.S. processed products that are competitively priced and meet the other requirements of the market.

And we can do more. We have a courageous and capable Secretary of Agriculture, who is undertaking a review of all our export and domestic commodity programs in full consultation with the leaders of American agriculture, the Congress, and the rest of the Administration--including the White House. I expect some bold new initiatives to grow out of this exercise.

Let's turn now to the outlook for fiscal 1983.

Outlook for fiscal 1983

As I mentioned earlier, in spite of the best of our efforts, the value of U.S. agricultural exports in fiscal 1983 may dip 4 percent. This will occur despite an increase in agricultural export volume to 163 million tons, up 3 percent from 158.4 million in 1982. The likelihood of a continued strong U.S. dollar, a weak global economic recovery, and smaller Soviet grain imports are likely to restrain the volume and value of U.S. exports.

Despite an increase in corn export volume, smaller wheat shipments and lower corn and wheat prices in fiscal 1983 are forecast to result in a drop in total grain and feed export value of 5 percent to \$16.7 billion.

Corn export volume is forecast to rise from 49.6 million tons to more than 54 million, because of a gain in shipments to Mexico, a somewhat larger share to some of our traditional markets, and increases in exports to other developing countries.

However, a large buildup in ending stocks is expected to result in a drop in corn prices, resulting in only a small increase in total value to \$6.0 billion.

Wheat export volume is forecast to decline slightly from 45.5 million tons to about 44.5 million, primarily because of increased competition from Canadian, Argentine, and EC exports. With a sharp rise in U.S. ending stocks, prices are expected to decline, resulting in a drop in the total value of wheat and flour exports from \$7.6 billion to \$7.0 billion.

Rice shipments are forecast to drop from 2.9 to 2.7 million tons due to larger foreign rice production and ample stocks in consuming nations. Coupled with low prices, this will result in a decline in the total rice export value from \$1.1 to \$1.0 billion.

The total value of U.S. exports of oilseeds and products in fiscal 1983 is forecast at \$9.0 billion, down 8 percent from last year, reflecting lower prices for the whole oilseed complex. Soybean export volume is forecast roughly the same at about 25.5 million tons because of stronger competition from Brazilian exports. And lower prices are expected to result in an 11 percent decline in total U.S. export value to \$5.8 billion.

Soybean meal export volume is forecast to rise 14 percent to 7.1 million tons, although lower prices are expected to produce little change in total export value. A favorable soybean meal/corn price ratio in the EC is expected to boost meal consumption and imports in this region. Soybean oil export volume is forecast to remain the same, with lower prices yielding a slight decline in total export value.

Cotton and linters export volume in fiscal 1983 is forecast to drop 15 percent to 1.3 million tons because of record 1982 Chinese cotton production, which will sharply reduce their imports. A weakness in cotton demand and imports in major markets will also limit export volume. Total export value is expected to fall from \$2.2 to \$1.9 billion.

Tobacco export volume in 1983 is forecast to show little change from last year's level of around 255,000 tons. Prices are expected to increase, however, yielding a total export value somewhat below \$1.5 billion.

Livestock and product exports are forecast to rise 8 percent in total value to \$3.4 billion because of larger shipments of beef and tallow. Higher prices for beef and pork exports are also forecast.

Poultry meat shipments in fiscal 1983 are forecast to decline to about 290,000 tons, hurt by subsidized EC and Brazilian exports, especially to the Middle East. Despite higher prices for most products in the poultry sector, poultry and poultry product shipments in fiscal 1983 are forecast to decline slightly from about \$580 million last year.

Dairy exports are forecast to fall sharply to below \$300 million because of much smaller butter shipments. This could change, however, if we begin exporting our surplus in response to EC intransigence on export subsidies. After all, if they won't admit that such subsidies are wrong, what basis do they have to complain if we do a little bit of it, too?

The value of sugar and tropical products exports is expected to fall slightly to below \$800 million because of a \$70-million drop in sugar exports. Exports of flavoring syrups and extracts, however, are expected to reach a record \$260 million.

Finally, exports of horticultural products in fiscal 1983 may recover slightly to \$2.9 billion. Larger shipments of fresh citrus and higher tree nut prices are expected to account for most of the increase.

U.S. agricultural exports in fiscal 1983 are likely to be restrained due to the three to four quarter lag effect that the appreciated U.S. dollar and slow global economic growth in 1982 will have on exports in 1983. Some of the key factors that will determine whether our outlook at this point will take shape include:

- The world's weather or a significant change in crop prospects next spring and early summer in the United States, major competitors or major importers.

- The value of the U.S. dollar; a further appreciated dollar would likely result in exports dropping even lower, while a decline in the dollar's strength could stimulate U.S. exports above forecasted levels.

- The strength of the U.S. and global economic recovery in 1983.

- The success of efforts to alleviate the debt problems of many developing and East European nations. U.S. exports to developing countries comprised 36 percent of total agricultural exports in fiscal 1982 and these countries will also be affected by foreign exchange constraints in 1983.

- The size of Soviet grain purchases.

- And a change in Soviet grain import policy.

Conclusion

Despite the problems, the overall market outlook for U.S. farmers appears to be improving.

The U.S. economy--farmers' No. 1 market--is turning now and gathering strength. It is headed in the right direction. As employment increases, so will demand for agricultural commodities.

Although the path to higher exports is strewn with obstacles, long-term export prospects are good. The potential market--the world's population--is growing steadily. Despite the current economic recession, economic development overseas is creating demand for more foods and better foods. U.S. farmers--clearly the most efficient producers in the world--are in the best position to supply this demand.

Looking down the road, I am confident that U.S. agricultural exports will start to climb again as the world economy improves. At a conference two weeks ago, the U.S. Agricultural Export Development Council adopted the goal of "75 by 85"--\$75 billion in U.S. agricultural exports by 1985. I heartily endorse their enthusiasm and their commitment to work toward that goal. It is achievable. And this Department will do all it can to help.

END

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ABSTRACT

A research project coordinated under the Regional Research system of the USDA Cooperative State Research Service has resulted in the implementation of a replicated survey on home energy conservation to 9763 households in eleven states. Successful accomplishment of this survey during the first year of the regional project's existence has implications for improving the conduct of other regional research projects. Preliminary findings from the project concerning state differences in conservation behavior, the use of federal tax credits, the influence of lifestyle cutbacks on conservation actions, and the lack of polarization of attitudes toward conservation and increased nuclear power have significant national policy implications.

INTRODUCTION

It is not clear to what extent energy conservation in peoples' homes is or will remain an important part of U.S. efforts to solve our future energy needs. During the last decade few topics generated as much public discussion as energy costs and availability. Abrupt changes in energy supplies and prices in the mid 1970's caused an immediate translation of an international and national problem to the level of individual households. Families across the nation experienced fuel shortages and dramatically higher costs for electricity and other fuels.

From 1975 to 1980, seven major federal laws concerned with energy conservation were enacted (Pelham, 1981). Included in these laws were conservation information programs, residential tax credits for home weatherization and installation of solar collection systems, standards of energy efficiency for home appliances, conservation loans to owners of multi-family dwellings, and mandatory requirements for utilities to provide energy audits and implement programs to improve the energy efficiency of residential customers' homes. (Dillman, et al., 1981.) At the same time, nearly all states passed laws that provided financial incentives to encourage home energy conservation and implement solar and other alternative energy sources for residences.

The last two years have witnessed a significant change in national energy policy. Federal conservation programs now seem out of favor. In their place is an emphasis on marketplace strategies. Although conservation is seen as desirable, it is viewed as a natural outcome of decontrolling oil and natural gas prices. Consistent with the new federalism emerging from Washington, D.C., it seems likely that energy conservation programs, if they exist, will be more the province of state and local rather than federal action.

The shift of emphasis away from federal programs and towards the states raises a host of unanswered questions. Do differences exist among states

regarding people's support for energy conservation? Where does home energy conservation rank in relation to other conservation alternatives and/or increasing energy production efforts? Is energy conservation seen as in conflict with or compatible with increased emphasis on nuclear power? Have federal tax credits and state tax incentives been effective in encouraging people to take home energy conservation actions that otherwise would not have been done? Have increases in the costs for home energy forced people to spend less on meeting other family needs? Does being forced to cut back expenditures in other areas of family needs encourage or discourage people from taking permanent home conservation actions? Is further home energy conservation likely to occur regardless of federal and state actions, or be dependent upon them?

The purpose of this paper is to report on a regional research project which was undertaken in ten western states and an eastern comparison state to answer these and related questions. Our goal was to determine the outlook for home energy conservation in the United States. This project, "Consequences of Energy Conservation Policies for Western Region Households," known as Western Region 159, is somewhat unusual in its operation and accomplishments. The acceptance of certain methodological and procedural constraints by 19 independent researchers in the 11 state Experiment Stations facilitated the collection of a data set of 9763 households, representative of the participating states. Data analysis began only one and one-half years after the idea for the project was first conceived. The conduct of this project has important implications for the USDA system of Cooperative Regional Research.

The paper will consist of two parts: First I will discuss the background to this unusual project. Then I will summarize selected findings that address the outlook for people's energy conservation efforts and implications for future U.S. energy policy.

THE CIRCUMSTANCES AND REASONS FOR REGIONAL COLLABORATION

Survey Procedures

The data for this project were collected by means of a common questionnaire, separately administered by researchers in each of the eleven states. The participants included ten contiguous western states: Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming, and an eastern comparison state - Pennsylvania. Approximately 1500 questionnaires were sent to disproportionate stratified random samples of households in each state with equal numbers being sent to urban (defined as Standard Metropolitan Statistical Areas) and rural households. This sample is representative of 19 million households--nearly 24 percent of all U.S. households.

Nearly identical data collection procedures were used in each state following the principles of the Total Design Method (Dillman, 1978), with administration being done simultaneously in most states beginning on March 9, 1981. The response rate across all states was 56.6 percent of the original sample or 63.6 percent of the households to which mail questionnaires were known to be delivered.

The 9763 completed questionnaires were coded by an agreed upon format and compiled onto one data tape which was in turn made available to all researchers. Weighting schemes were developed for taking into account the

stratified rural/urban sample in each state and the variation between states within the region (Rosa and Miethe, 1981). The sample design and use of appropriate weighting procedures allow this single data set to be used for a variety of important analyses, i.e. individual states, rural-urban comparisons within and between states and analyses of the entire western region. Coding of climatic variation and other regional variables allows unusual breadth in these analyses.

Background to collaboration

Most research tends to be a highly individualistic activity. Studies are usually conceptualized by individuals and seldom involve much collaboration outside of that researcher's university. Replication across states or an entire region is unusual and often the costs are prohibitive. There are innumerable barriers to the accomplishment of a study such as this one which required all researchers to use the same questionnaire and the same procedures. The reasons for its occurrence in this case is less the result of a single cause than multiple causes that led to the conclusion by the participants that the benefits of regional cooperation outweighed the costs.

Collaboration was achieved under the umbrella of the USDA Cooperative Regional Research project system, which provided a means of overcoming the multitude of barriers, any one of which would have thwarted the entire project. However, replicating a project across many states is not an automatic outcome of regional projects. More often such projects proceed with rather loose collaboration whereby researchers meet to share methods and results, but most often independently collect and analyze data. The W-159 project is also unusual in that the common data collection occurred only four months after being accorded official project status, barely into the five year life of the project.

Home economics has traditionally manifested a concern for family housing. Most college curricula in home economics include housing courses which range from a micro-environment orientation, such as designing spaces to meet special human needs, to those that focus on macro-environment concerns of developing strategies for improving the housing stock of the nation. The problem of housing related energy concerns, both macro and micro in nature, was articulated by home economists and others concerned with family welfare throughout the mid-seventies (cf. Morrison and Gladhart, 1976, Dillman, et al., 1977, Zuiches, 1976, Tremblay, Jr., 1982). The Comprehensive National Plan for new Initiatives in Home Economics Research, Extension and Higher Education (SEA-USDA, 1981) identified "Energy and Environment" as one of the three major thrusts for future program efforts with "conservation practices" and "household repairs and renovations" within the first order or priority for implementing the new initiatives.

Against this background a Western Regional Coordinating Committee (No. 35) was officially created in 1977 to bring housing researchers in the western region together for the explicit purpose of sharing information about their research ideas and activities. Near the end of its three year official life, in March 1980, the committee agreed that energy research was a common interest of the committee members and made the decision to develop a regional project. The Decision to collaborate

The decision to do a replicated survey in all of the states evolved from some long difficult discussions. Undergirding these discussion were concerns

about home economics and social science research on energy issues. Many previous studies were limited to small geographically isolated samples. Few studies had focused on household energy use and behavior. National probability sample surveys were of little help in understanding state differences, particularly among the western states as such surveys ordinarily had too few households to allow meaningful state comparisons. Yet, we recognized that understanding state differences was from a policy perspective essential. State differences in conservation behavior were expected because of differences in climate, the use of different fuels, and variations in costs of fuels for home heating use. We wanted to investigate these differences. We also recognized that analyses of data from one state would be much more meaningful if they could be compared with another state or group of states.

In the late 1970's, costs of social science data collection were spiraling and funding for social science research on energy was scarce. Finding funds to support a regional face-to-face or even telephone interview survey seemed likely to be time consuming and the outcome was uncertain. We also realized that a well done survey required skills beyond those of any single member of the Committee and beyond the resources of any single experiment station.

Considerations encouraging the conduct of a joint survey included recognition that considerable improvement had occurred in mail survey procedures during the 1970's (Dillman, 1978). Although some compromises in sample frames were required (i.e., the willingness to accept some bias against renters and young persons) reasonable response rates could be expected at a low cost. Also, the procedures were sufficiently standardized that we were confident that true replications could be accomplished in each state. A key factor in the decision to do a joint survey was a Committee decision that one page of the questionnaire would be reserved for questions unique to each state.

The pursuit of common objectives

Once the decision to do a replicated survey was made, variations in individual and state resources were recognized and a division of labor was established for developing precise sample design, implementation procedures, constructing and printing of the questionnaire, and the development of a common code book.

These activities were guided by the acceptance of three specific project objectives:

- (1) To describe the acceptability of home-related energy conservation policies and practices by rural and urban households in the western region.
- (2) To determine the influences of (a) housing characteristics, (b) current energy use, (c) demographic characteristics, (d) household lifestyles, (e) geographic location, and (f) energy knowledge on the acceptability of energy conservation policies and practices.
- (3) To monitor changes in energy conservation practices over time and identify the factors to their occurrence.

The specific idea to pursue a common project was developed by the WRCC-35 in March 1980. Three subsequent two day meetings were held during the remainder of 1980 to develop the common project. The first such meeting in April (supported by a grant from the Western Rural Development Center)

brought representatives of eight states together to develop the project objectives and to establish general agreement on the basic research procedures to be developed. Based on this meeting the regional project proposal was prepared and submitted in June. In October it was learned that the proposal had received Committee of Nine approval and the WRCC-35 (in its final authorized meeting) met to finalize the conceptual content of the questionnaire and to draft the common survey procedures. The momentum of the committee continued as the first official meeting of the W-159 Technical Committee in December 1980 brought the questionnaire to the stage of pretesting. The exact details for implementing the project were finalized along with plans for how to handle the data once it was collected.

As the data collection progressed, the timeliness of the energy topic and the intent of committee members to publish reports of the regional data as early as possible led to securing a second grant from the Western Rural Development Center for support of this project. This grant provided travel to bring together a writing committee consisting of five selected members of the Technical Committee. The group convened August 1981 at Washington State University to examine the "still wet" regional data set as it was being assembled. This unique opportunity resulted in the draft of a journal article (Dillman, et al., 1981) and the regional databook (Makela, et al., 1982). The grant also provided for numerous hours of computer analysis as the data from the separate states were assembled into the regional data tape.

Gaining the agreement of independent researchers on every question and procedure for a study was a long arduous process for W-159, and required much give and take among individuals. Our ability to give and take in this manner is again being tested as we prepare to recontact all of the responding households in a February 1983 followup survey combined with a survey of a new sample of households. The accomplishments of the committee represents a creative use of Cooperative Regional Research project procedures that is available to other researchers throughout the United States. For those of us participating in W-159, the benefits of having an important new data set which can be used to address emerging energy issues are just now being realized.

However, the ultimate test of worth is whether the questions that were asked at the beginning of this project, and stated in the introduction of this paper can now be answered. I will now turn to selected findings from the research.

PRELIMINARY FINDINGS: THE CONSEQUENCES OF ENERGY CONSERVATION POLICIES FOR WESTERN REGION HOUSEHOLDS

It is most appropriate for me to speak of the findings from the regional project as preliminary, inasmuch as the regional computer tape was compiled less than a year ago, and secondly because of the large number of people involved in the analysis. All current members of the Technical Committee have equal access to regional data for analysis. Although publication of individual state analyses is reserved for the investigators of each respective state, any member of the Technical Committee can perform regional analyses on all variables. The equal access for analysis creates a potential for duplication of effort and possible misunderstandings among researchers. The method used by our committee to prevent such problems is the requirement that each investigator notify all other investigators of variables and analyses they plan to do prior to beginning the work. Annual meetings, substantial communication

between those meetings and the relationships that have developed through the period of time we have worked together are relied upon to prevent misunderstanding.

In the last year a variety of analyses have been begun, several papers have been presented, and other analyses are moving through the manuscript stage. The analyses of regional data most central to the project objectives are summarized here with appropriate references for those who wish more detail.

Do differences in conservation beliefs and attitudes exist among states?

One of the first questions articulated by the Committee was whether sufficient state differences existed to warrant distinctly different approaches to energy conservation in each state. A variety of attitudes towards consumption were reported in Housing and Society by Dillman et al., (1981). As reported there, we found that beliefs and attitudes were strikingly consistent across states, with a few exceptions. When asked whether future energy needs of the U.S. should be met by increased production or cutbacks in use, fully two-thirds of the respondents (the range among states was from 63 to 70 percent) opted for depending equally on both. Respondents from different states were also quite similar in the priority they placed on various ways of meeting future energy needs, with more use of solar energy and more exploration of oil in the U.S. being most popular. The percent favoring either of these approaches ranged from a low of 86 percent in one state to a high of 95 percent in another. Uniformity across states was also similar for most other items, although an interesting divergency was present on "more use of nuclear power". Only 35 percent of the Pennsylvania residents, in an apparent reaction to Three Mile Island, favored that option compared to a range of 43 to 55 percent among the other states.

Regional differences were only somewhat apparent in our analysis of responses to 14 potential policies for reducing energy use. For example, whereas 42 percent of California residents favored "requiring home thermostats to be no higher than 65 degrees in winter", only half that proportion, 21 percent of Utah residents favored that policy. Opposition was similarly strong in other northern states with severe winters, i.e. Montana, Idaho and Wyoming. Recognizing the overall similarity of people's responses, the authors concluded:

"... to the extent western states individually decide to take an active role in energy conservation, it would seem they could profitably work with other states sharing blueprints and general methods for conservation. People's inclinations to accept or reject policies are simply not sharply demarcated by state boundaries." (Dillman, et al. 1981, p 91)

Do differences in conservation behavior exist among states?

Differences among conservation behaviors were addressed in the most comprehensive report thus far published by committee members: Energy Directions: A Western Perspective, by Makela et al. (1982). This report, which also extensively reports the methodological details for the entire study, indicates that substantial differences exist. For example, whereas weather stripping and caulking exist on most doors and windows in 78 percent of the Wyoming households, only 51 percent of the California households report that to be the case. Whereas Wyoming had 66 percent report storm doors on all entrances, California

reported only six percent. Climatic differences appear to be the source of such variations. There was also considerable variation in efforts to cope with winter heating bills. For example, whereas 42 percent of the Idaho households reported wood burning stoves, the average for all states was only 23 percent. Plans to add energy saving features during the next two years also vary widely among states.

It is apparent from this detailed analysis that householders are responding differently to different local situations. We believe it is likely that different approaches to conservation are warranted in different states, and people seem likely to respond to different levels of incentives because of variable amounts of benefit to be derived from installing insulation, or other conservation features.

Is energy conservation seen in conflict with an increased emphasis on nuclear power?

In a paper presented at the annual meetings of the American Association for the Advancement of Science, Rosa, et al., (1982) explored the relationship between public support for conservation and more use of nuclear power. This question is of much current concern because of governmental emphasis on nuclear power in the face of much public opposition.

When asked the extent to which they favored or opposed more use of nuclear power, 46 percent of the respondents favored more use of nuclear power, 31 percent were opposed and 23 percent were neutral. When given a choice of options to meet future energy needs, more use of nuclear power is ranked ninth among 11 options as follows: (1) more use of solar energy, 93%; (2) more exploration for oil in the U.S., 90%; (3) more use of wind energy, 89%; (4) more use of western coal, 71%; (5) more use of oil from western shale, 70%; (6) reduce energy use in homes, 69%; (7) reduce energy use in business and industry, 55%; (8) reduce energy use in individual travel, 53%; (9) more use of nuclear power, 46%; (10) reduce energy use by agriculture, 19%; and (11) more oil imports, 6%.

In many policy discussions conservation and the expansion of nuclear power are pitted against one another. This issue is addressed by Rosa et al., and their analysis reveals that a substantial proportion of respondents favor both options and many favor neither. They conclude:

"... the controversy between expanding nuclear energy and increased energy conservation is considerably more complicated than presumed in the policy community... A national policy which emphasizes differences between nuclear power and conservation in strikingly oppositional terms seems destined to gain less public support than a policy that makes room for both options." (Rosa et al., 1982, pp. 13-14)

The authors suggest that focusing national efforts on the development of nuclear power at the expense of conservation programs may very well prolong the existing high level of opposition to nuclear power.

What is the influence of energy tax credits on home energy conservation?

One of the most tangible conservation programs undertaken by the federal government is the provision of income tax credits to encourage weatherization and the development of alternative energy systems and conservation in people's homes. The awareness and use of federal tax credits was investigated by Carpenter and Chester, Jr. (1982) by examining responses to the tax question by 4892 homeowners living in single family detached homes in the 10 western states. Respondents were asked whether they were aware of the federal income tax credit for improving the energy efficiency of their home and if they did or did not make a claim on the 1978, 1979, or 1980 federal income taxes. Eighty-seven percent of the homeowners indicated they were aware of the tax credit, and 35 percent of those indicated that they made a claim on their taxes during one or more of the three years.

Of those respondents making a claim, 91 of the 1440 claimants (6%) said they probably or definitely would not have done the improvement if the tax credit were not available. Of the remaining claimants, 38 percent said they probably would have made the improvement and 56 percent said they definitely would have done it anyway. Thus, it appears from this early examination of the data that homeowners are only marginally (they responded to "probably would have made the improvement") influenced by the federal tax credit.

Upon closer examination of the data it was found that when people who had added a solar water heater and/or solar space heating were isolated from other tax claimants, only 63 percent of those respondents said they would have made the improvements anyway. The authors concluded that for large expenditure energy conserving items such as solar installations that the energy tax credits are needed to stimulate alternative energy systems to be installed.

A separate analysis by Peterson (1982), using somewhat different procedures, reached similar conclusions about the limited effects of tax credit incentives. However, he concluded that by interpreting "probably yes" (to the question of whether the taking of actions was influenced by the availability of tax credits) that "over half of all claimants in the western region were at least marginally influenced by the tax credits to take conserving actions."

Analysis of the effects of tax credits was limited by the few questions on this topic included in the 1981 survey and plans are being made to obtain more detailed information on the 1983 followup survey.

What is the influence of lifestyle sacrifices on conservation?

In a paper presented at the 1982 International Conference on Consumer Behaviour and Energy Policy in Noordwijkerhout, The Netherlands, Dillman et al., (1982) analyzed the apparent impact of being forced by higher energy prices to take lifestyle cutbacks (e.g., spending less for groceries and recreation), on taking temporary conservation adjustments, (e.g., closing off rooms or lowering room temperatures). The important issue being explored was whether being forced to sacrifice elements of lifestyle encouraged the taking of permanent conservation actions; if so, this would suggest that deregulation of oil and gas prices and thus freeing them to respond to demand considerations might be expected to encourage the taking of permanent conservation actions. The analysis found that being forced to take lifestyle cutbacks was positively related to making temporary home adjustments. However, taking lifestyle

cutbacks was not related to the taking of permanent conservation actions. A negative relationship existed between taking lifestyle cutbacks and the use of federal income tax credits for conservation actions. Thus, the hypothesis was not supported that being required by higher energy costs to make sacrifices encourages permanent conservation.

This findings raise important questions about federal income tax credit program. The negative relationship between lifestyle cutbacks and the use of federal income tax credits make it clear that the ones taking advantage of that program are not the ones who are being most affected by higher energy prices.

Examination of the relationships between family financial resources and each of the indexes helped to clarify the reasons. Lifestyle cutbacks are reactions of predominately lower income people who, in general, lack savings. Conservation actions, on the other hand, are the reactions of people who have higher incomes and/or invested money that can be used for that purpose. The authors conclude that "... the poor have tended to take cutbacks while the rich have tended to invest in conservation in response to higher energy prices." It remains for future research to further clarify the relationships by specifying effects of such important variables as home ownership and age of dwelling.

Rural-urban differences

The beliefs and opinions of rural residents about the U.S. energy situation and ways to meet future energy needs were compared to those of urban residents by Guthrie and Jones (1982). They found that rural and urban respondents exhibited significant differences of opinion on many energy conservation policies. In general, rural residents were less favorable to most proposed governmental policies. More detailed rural-urban analyses are in process.

State analyses

In addition to the regional analyses mentioned above analyses of individual state questions have been completed. Analysis of the "state pages" have included factors which affect the decision to insulate (California), characteristics of users and non-users of home energy conservation information (Colorado), attitudes and beliefs about working at home and communicating to work (Nevada), energy policy and transportation issues (Pennsylvania), public acceptance of consumer energy conservation strategies (Washington) and a comparison of energy related attitudes and opinions of solar users and randomly selected residents (Wyoming). A complete listing of all written technical reports, professional presentations, and publications of the W-159 project, including state analyses, is now available.²

Conclusions

Conservation can do a great deal to help meet the future energy needs of our nation. Attitudes toward conservation are generally positive. It is quite a contrast from 1973, when an attitude of "this country did not conserve its way to greatness, it produced itself to greatness" seemed to prevail. Surprisingly, fully 60 percent of the respondents said they could reduce energy consumption by one fourth if it were necessary to do so.

Research by the W-159 committee thus far has found much similarity among states, but has also identified noteworthy differences which suggest some variation in means of encouraging energy conservation may be desirable. The research has also raised important questions about the effectiveness of the federal income tax credits in influencing people to undertake energy conservation actions.

END NOTES

¹For precise details of how the study was implemented see Makela et al., 1982.

²For complete listing of W-159 Publication Activity, contact William R. Fasse, Chair W-159 Publications Committee, School of Home Economics, University of Arizona, Tucson, AZ 85721

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A MULTI-THERM RESIDENCE

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OUTLOOK '83



Introduction

"Have you thought of bathing among the plants and shrubs in a greenhouse environment?" "Some people may appreciate the washer and dryer being near the bedrooms." "Remember this house is planned for low-cost construction and low-energy requirements." "We must make this house aesthetically attractive so the public will buy the idea." These are some of the comments, suggestions, and arguments that have evolved over a two-year period as our 26-member interdisciplinary group, meeting periodically, planned and designed the multi-therm* residence. (Fig. 1 and 2). This paper explains the process of planning the multi-therm residence and provides a description of the floor plan of the dwelling.

Planning Process

Project

The USDA/ARS Rural Housing Research Unit in cooperation with individuals from several colleges at Clemson University, Clemson, South Carolina, and the School of Consumer Science and Allied Professions at Winthrop College, Rock Hill, South Carolina, initiated a project to design an aesthetically pleasing, energy-efficient, low-cost house. Prior research conducted at the Rural Housing Research Unit and other factors known to the committee concerning solar houses served as a starting point for the project. These factors involved the solar-earth house, a greenhouse-residence, and a solar-attic heating system which provide opportunities to utilize energy and resources in a way that would not be possible if the components were built separately. This knowledge was used as a base when the interdisciplinary committee of professionals began the project.

*A multi-therm is a zoned heating system that allows each part of the house to be heated and/or cooled to temperature levels that correspond to the zones' intended use, the availability of energy and the cost of energy.



Fig. 1. Model of Multi-Therm Solar Earth House

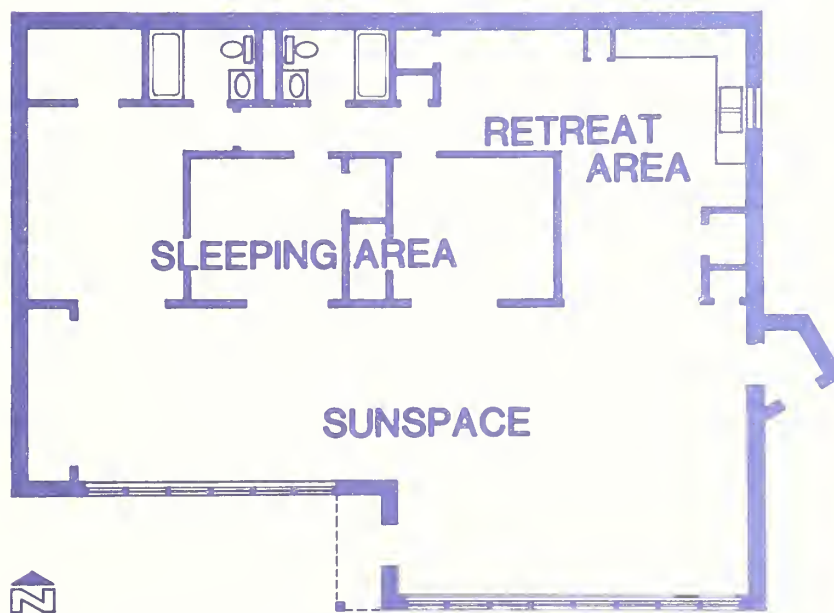


Fig. 2. Floor Plan of Multi-Therm Solar Earth House

The Interdisciplinary Committee

The interdisciplinary committee approach was selected for the project so that all aspects of the housing problem would be considered in the design in order to provide users with objective information and a broad spectrum of knowledge from various professionals. The initial committee was composed of Clemson, USDA, and Winthrop personnel. As the project progressed, additional members and new disciplinary areas have become involved and have been added to the committee as new areas of research became apparent. The various disciplines and interests of the committee are as follows:

1. Horticulture - The horticulture members of the committee are interested in the use of both vegetable and ornamental plants and the way they can be handled in a greenhouse-residence environment. Movable growing beds and the ability to take plants outside are being considered. Plans are being made for landscaping and integration of outdoor activities with the use of the house. The horticulturist is planning the driveway, the outdoor lighting, walkways, a picnic area and aesthetic and useful plantings.
2. Entomology - The primary concern of the entomologist is controlling insects when the greenhouse and the house environment are combined. Rolling plant benches are being designed to facilitate the moving of plants if it becomes necessary to apply toxic chemicals to take them out of the house or to agitate or replace growing media. Pretesting of insect control for the multi-therm residence by chemical, biological, and natural means is currently being conducted by the Rural Housing Research Unit in four greenhouse environmental chambers.
3. Home Furnishings - Knowledge necessary for the selection of home furnishings in the multi-therm residence will be acquired by the home furnishings specialist. Furnishings will be evaluated by the home furnishings specialist in relation to the family's functions, needs, and goals. The home furnishings specialist will also study the performance of textiles in the multi-therm residence as applied to upholstery, window treatments, and carpeting.
4. Housing - The housing specialist is interested in the overall floor plan design of the multi-therm residence. Traffic patterns, doorway openings, placement of bathrooms, and storage spaces were studied by the housing specialist. Several kitchen designs incorporating the selection and placement of the major pieces of equipment in conjunction with the sink, cooking and mixing centers were evaluated before the actual kitchen plan was selected.
5. Interior Design - The interior designer is interested in space planning that will meet user requirements in an aesthetically pleasing environment. The designer will be identifying and applying an effective and appropriate lighting plan, identifying suitable and satisfying hardwood furniture materials, selecting an appropriate color scheme, and selecting wall coverings, floor coverings, and other aesthetic materials.

6. Economics - Expense of ownership of the multi-therm residence is the major interest of the economist. The economist is comparing initial and operating costs of the multi-therm residence with conventional housing. The relative expenses of owning and operating the multi-therm residence will be compared to the costs of a similar conventional home in terms of living space and usefulness. All expenses will be evaluated in order to determine both the short- and the long-run costs and the life cycle of the house. The economist is also examining institutional constraints to financing the multi-therm residence and identifying possible restrictions that may be imposed by financial institutions before granting loans to a potential multi-therm residence purchaser.
7. Forestry - The forestry members' interests have focused on the orientation of the multi-therm residence to the land in relation to the trees and their effect on house energy requirements. They will be removing trees periodically on the site to change the amount of shading and, thus, the amount of energy striking the house.
8. Agriculture Engineering - The agriculture engineers have been involved in the design and testing of the physical structure which will be the multi-therm residence. Since the multi-therm residence has many individual energy aspects integrated into the total structural unit, plans are under way to determine a method of separating each system and evaluating the input of each. The concept of moist soil and dry soil controlling the conductive heat loss is being studied. The instrument and data collection systems are being designed by the agricultural engineers. They have developed a computerized data acquisition system that resides on-site and is connected by modems to a central computer that organizes, stores, and manipulates the data in the Rural Housing Research Unit's office. They can also check house performance without visiting the house.
9. Sociology and Psychology - The sociologist and psychologist are interested in the behavior of users of the multi-therm residence. They will be determining if the users will use the sunspace as a living space and how they will function in this new space; movement of furniture and traffic patterns will be monitored. The psychologist and sociologist will analyze the resulting information and do comparative studies with the interior designer on user behavior in relation to the users' environment.
10. Sanitation Engineering - The sanitation engineer has been involved in the plumbing system design. The placement of the bathrooms, energy efficient plumbing equipment and systems, and solar-heated water are of prime concern. The mini-computers will enable the sanitation engineer to measure such things as the amount of hot water used to wash a teenager's hair and the amount of water used to wash an individual's hands.
11. Architecture - The architect has had a major task to perform since his job was to combine the thoughts of all the disciplines into a floor plan. Members of the committee submitted their research proposals to the architect who, in turn, incorporated each member's proposal and concept into the design. The architect is interested in the total structure and design of the residence. The floor plan, the lighting system, the orientation of the residence to its environment, the roof structure, and shading devices are included in these interests.

12. Civil Engineering - The civil engineer is interested in the structure and overall construction of the residence. Drafting of plans, explaining the construction, and coordinating the project have been concerns of the civil engineer.
13. Furniture Manufacturing - The room sizes in the conventional area of the multi-therm residence are smaller than the room sizes to which the typical house users are accustomed; therefore, the traditional size pieces of furniture may not be appropriate for the room sizes of the multi-therm residence. Furniture manufacturers may find it desirable to design multi-purpose furniture. For instance, a table may also serve as a bed, a storage unit, or a sofa.

Members of the Tennessee Valley Authority (TVA) served as consultants for the project and agreed to do most of the theoretical calculations to back up the standard and thermal design of the house. They are also interested in having the plans distributed and may be able to do the final drawings which will be a set of working drawings.

In the final stages of planning, individuals from manufacturing, business, and other organizations assisted. A "Memorandum of Understanding" among the Rural Housing Research Unit, Energy Research and Development Institute, and the Clemson University Housing Foundation was established as a basis for cooperatively building, testing, and disposing of prototype products. The Concrete Masonry Association, Brick Institute, Farm Insulation Manufacturers, and Sealing and Water-Proofing Manufacturers have also shown a special interest.

The Multi-Therm Residence

The Plans

Initially, the committee decided to develop three or four functional floor plans, of which one would be selected for refinement and then construction and testing. A total of seven concepts were developed; two were proposed for further consideration and refinement, and one was to become a research prototype.

A ground-breaking was held by team members in mid-spring 1982, and the prototype residence is now under construction. (See Fig. 3.) At the present time, the foundation has been laid, the walls have been erected, and the multi-therm residence is taking shape.

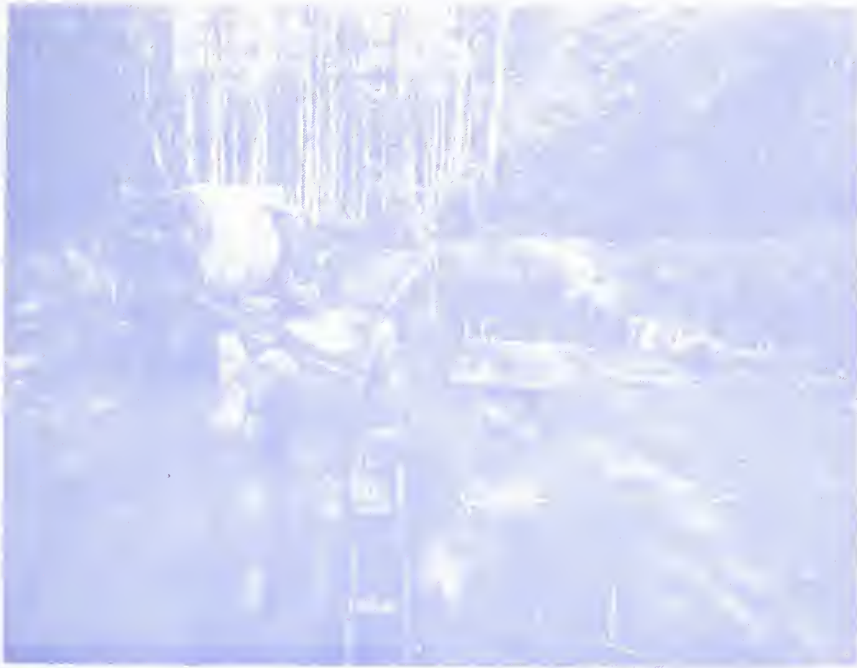


Fig. 3. Site of Multi-Therm Solar Earth House

The Multi-Therm Solar Earth House

The multi-therm solar earth house features a large multi-use sunspace area that is passively heated, a retreat area that is maintained at the desired or selected temperatures, and a sleeping area that is solar heated and provided with a manually controlled back-up heating system. (See Fig. 2.) Each of these spaces is described below.

Sunspace

The house has a sunspace of 800 square feet that is passively heated by solar energy. Auxiliary heat will not be used in the sunspace. Occasionally, temperatures may drop below the comfort level and the inhabitants can move into the retreat area. The multi-use sunspace may be used for expanded living, plant and vegetable growing, recreation, and other household activities. It is expected that the temperatures in the sunspace will remain comfortable most of the time. To help ensure this, the bottom half of the wall which separates the retreat area from the sunspace will be of brick with a concrete core, and perimeter walls will be of masonry with exterior insulation. Both will provide storage for collected energy. Sliding glass doors prevent excessive heat loss from the retreat area during periods when the sunspace may be cool. The concrete block perimeter walls are covered by selected masonry wall finishes to enhance the space without inhibiting the walls' thermal response. The sunspace provides a large, aesthetically pleasing space that is attractive, easy to maintain, and economical to build and operate.

Interior and Furnishings of the Sunspace

The interior of the sunspace will include materials and furnishings to facilitate the energy and aesthetic requirements of the space. Sliding glass doors of the three bedrooms will open onto a concrete floor, and the living room sliding glass doors will open onto a decorative masonry floor. Both types of flooring provide thermal mass needed for the collection of solar energy. Consideration will be given to the type furniture used in the sunspace because textiles and furniture which receive sunlight are susceptible to fading and deterioration. Colors and material types for furniture, wall coverings, and textiles must be selected to insure proper reflection and collection of energy. The correct selection of colors will help to insure the reduction of glare and visual discomfort and to distribute light over a larger surface area.

Retreat Area

A retreat area of 400 square feet is heated and cooled conventionally. This area includes cooking, dining, and family areas. Because of the small size of the retreat area, family activities can expand from the retreat area into the spacious sunspace. Walls in the retreat area are masonry brick and concrete block with decorative finishes. The floor is covered with carpet and/or tile over a concrete slab. Perimeter walls of the retreat area are earth embanked on two sides. The remaining walls are protected and insulated by the adjacent sunspace and sleeping areas.

Sleeping Area

A sleeping area of 600 square feet is solar heated. Two walls are earth embanked, and the retreat and sunspace provide thermal shields on the two remaining walls. Research will determine if the sleeping area will remain at a comfortable temperature without auxiliary energy; however, provisions are made to supply auxiliary energy if the need arises. The area of the small bedrooms is magnified visually by sliding glass doors that open directly to the sunspace. Large fixed-pane windows in the upper part of the wall also provide additional natural light into each bedroom. Reading, lounging, sewing, sleeping, and other activities can be expanded into the multi-purpose sunspace. The adjacent sunspace provides additional play area and, as in other areas, the walls are of masonry construction with decorative finishes that will enhance the thermal storage and the area use.

Data Collection

The multi-therm solar house is highly instrumented. A micro-computer collects temperature, moisture, structural, sociological, and psychological data. Sensors placed in selected strategic locations measure responses to climatic, human, and household activities.

The speed and capacity of the computer allows the sensors to measure functional operations of the inhabitants. Data from the computer will be collected and analyzed; evaluation and assessments will be reported.

The authors would like to recognize the committee and their major areas of interest.

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USDA funded a special-needs project entitled, "Curriculum Sourcebook for Family Financial Management," in May of 1982. The project was funded because of the prevalent need for family financial management skills among people in all the states. People at all economic levels are experiencing problems in buying, saving, and generally planning the use of resources over a lifetime. The economy itself is in as poor a shape as it has been since the period 1929-40. With unemployment at a rate which equals the Depression days, and which in many cases is still increasing, and inflation having taken a major toll on income levels, it is increasingly important for families to be able to manage resources to maintain a lifestyle for an extended period of time. Bankruptcy rates are high, and growing higher in some cases due to legislation, but in many cases because families simply did not have an adequate cushion or plan for resources so that when a crisis hit, they had no alternative but bankruptcy.

These factors serve as the basis for the project in terms of the subject matter itself. Within Extension Home Economics, there is a growing awareness of the need for a more concrete image of what Extension Home Economics does to help families with their economic problems. In addition, Extension Home Economics along with the rest of Extension is experiencing an emphasis on accountability. "Grass roots" planning from the counties to the state to the Federal office, which has served Extension so well through the years, may be a contributing factor in terms of the ability of Extension staff to describe the outcomes of their programs, or the impact they have actually had on people. The variety and complexity of economic problems families face make it hard to summarize information--wants and impact.

Numerous reports from USDA of advisory groups, the User Advisory Board, state reports in terms of narrative plans of work, and the era in which we are living, all pointed to the importance of family financial management as an area of focus for this special-needs project.

Thus, the project was an effort to identify that subject matter which is appropriate for family financial management, but also to identify some priorities for the decade of the 80's with evaluation strategies which might be of value in describing the impact of Extension Home Economics programs on family financial management.

The Project

The objective of the project is relatively simple, to develop a curriculum sourcebook which can be made available to agents and specialists with the Extension Service in the respective states. It can serve as a resource in

developing Family Financial Management programs. Extension staff would have the option of utilizing the sourcebook as a part of their program planning, as a means of identifying content for delivery of programs, and as a means of identifying evaluation strategies. There is no implication that the sourcebook is to be the curriculum to be followed for the period of '83 through '91. In fact, it is probably impossible for all of the content which is listed in the outline to be included in programs--the content is far too broad. The content of the sourcebook itself will have four parts. Of primary importance to all parts of the sourcebook is an outline of the subject matter to be included in family financial management Extension education programs. Resources which can be utilized in teaching or delivering material to the clientele will be provided as they relate to the topic outline. Those resources will be Extension publications, publications developed by business/industry, and/or publications developed by other educational program units.

The second part of the sourcebook will be a section on research. The research information will be presented from the perspective of the outline, with benchmark research and current research of value to program delivery identified within the project.

The third part of the sourcebook will include data which is essential to presentation of content. That data would include statistics in terms of mean and median income, value of housing, Consumer Price Index values, unemployment rates, rates of labor-force participation for women, and other similar kinds of data. This data is essential to delivery of the content, but it is data which changes on a relatively frequent basis. Many agents do not know where to get updated information in a hurry. The data section, then, will have the data itself, as well as a source or means of updating the information on a regular basis.

The fourth part of the sourcebook will be the identification of priorities for the decade. Three priorities will be identified--one for the period '83 through '85, one for the period '86 through '88, and one for the period '89 through '91. These priorities are being identified in an effort to help agents and specialists who choose to focus on specific content within a given period of time to do so. The priorities as identified will have with them corresponding evaluation strategies. They will not necessarily relate to a specific lesson, but will relate to the general change in behavior which one might expect of people who improved their skills in family financial management.

The Process

The first step in development of the curriculum sourcebook was the identification of an advisory committee to serve in an advisory capacity to the project. Representation from the various regions of the country was sought. The committee is composed of seven family/consumer economics or family resource management specialists; one agricultural economist; Dr. Betsy Davis, Dr. Colien Hefferan, and Dr. Ava Rodgers from the USDA staff; and myself.

Outline

The committee has been charged with review of the outline, and they have been asked to provide input in terms of conceptual frameworks which may be of use to agents and/or specialists.

After the initial outline was drafted, they reviewed the outline, provided input, and it was modified. (See Appendix A for the Outline.)

The first outline section deals primarily with the process of managing financial resources--decision-making, goal setting, the input of values and particular techniques or methods for buying and saving.

The second part of the outline focuses on the interaction of the consumer or family with government and the general economy. As families make decisions in allocating resources, it becomes increasingly apparent that public policy--government action in the form of taxation, transfer of property, risk sharing, and planning for retirement--affects the type of financial decisions that families will make. The fact that we've had inflation for an extended period, and that we now have a major portion of the population unemployed, are also factors for consideration in family financial planning.

The third portion of the outline deals with the identification of the family financial resources as well as acquisition of resources. Individual and/or family allocation of time and personal energy to the acquisition of money income, the use of human capital to acquire resources to maintain a desired level of living, and the use of personal time and energy to extend money income by effective household production activities are the primary focus of subject-matter content in this portion of the outline.

Each portion of the outline will have a brief narrative in terms of significant principles to be considered, relative to that concept. The narrative would not be enough to teach a lesson, but it would provide some understanding of the principle behind a given section of the outline and direction for development of family financial resource management.

As a means of assessing whether the outline was usable by agents, twelve randomly selected agents from Indiana and Illinois were given a list of thirteen clientele problems. They were asked to identify where in the curriculum outline they would find information to respond to that clientele question. Table 1. shows a breakdown of their response. As a result, specific efforts are being directed to the narrative of the outline and to directions/training for use of the outline.

Resources

The resource section will provide information on materials that are useful in teaching family financial management. Of primary concern has been the need to identify good research-based publications for use in provision of subject-matter training to clientele. A method for identifying and critiquing resources to be included in the outline was necessary. It is readily apparent from the quantity of consumer education materials available that all materials available in the educational marketplace could not be included. Thus, we have

asked specialists throughout the nation, and from selected business or educational organizations and agencies, to suggest appropriate materials. Materials will be critiqued or reviewed by two members of the advisory committee. If they agree that the materials should be included in the outline, they will be included. When they have a question, a third opinion will be solicited to determine whether to include the materials or not. It is hoped that only high-quality materials will be included.

Table 1. Problems Sent to Home Economics Agents to Test the Usefulness of the Outline and Number of Appropriate Responses

<u>Problems</u>	<u>Appropriate Responses Frequency</u>	
What is an HMO and what advantage would one be to me?	2	I B4 b2
My wife and I are getting divorced and I want to know what it costs to raise kids, so we'll reach a reasonable amount for me to pay her.	5	I B2 a1,2
I'm on my own, in my first job and don't know how I should be spending. I'd like to buy a house, but don't know how I'll afford to.	5	I B2 a1,2
Understanding inflation.	4	II C1,3
We saw a refrigerator on sale, but don't have the cash on hand. Should we borrow to buy now?	7	I B6 b2
Teaching your child about money.	5	IA
New investment alternatives.	4	III B2 a1
Coping with unemployment.	4	I B3 a-f
Planning for retirement.	7	I B2 c
Time management.	4	IA, III A2
We are really having money problems. We just get by, from paycheck to paycheck. We've got so many bills. Can you help?	7	I A,B a11
I really need a loan and I can't get one. My ex-husband took care of all the money matters. What can I do?	6	I B2 a-c
We want to buy a house and the realtor says she can get us financing at a really low rate. Is there a hidden catch?	2	I B6
Life insurance: do you really need it?	1	I B4 b

Letters were sent the first week in October to specialists throughout the nation, soliciting suggested resources for inclusion. There was no limit to the number of resources suggested.

To date, the response from specialists has resulted in 36 pieces. The review process will identify the materials to be included. See Table 2 for a summary of responses to date.

Table 2. Suggested Resources for the Curriculum Sourcebook

Topic	Number
Part I Management of resources	
General management process	1
Decision-making	9
Planning.	
Evaluating.	
Communicating	
Specific skills	
Obtaining financial resources	3
Allocating income	3
Adjusting to different income levels.	6
Planning for consumer risk and uncertainty.	4
Managing property	4
Purchasing goods.	3
Part II Regulation, market conditions and public policy	
Regulation and safety of consumer goods	
Goods	
Services.	
Consumer rights and responsibilities	
Rights.	
Responsibilities.	
Consumer responsibility in the marketplace.	
Consumer assistance with problems	
Price and market conditions	
Consumer Price Index.	1
Cost-of-living adjustments.	
Economic indicators	
Economic system	
International/national trade interaction with family economic well-being	
Clothing.	
Food.	
Household equipment	
Oil	
Household textiles.	
Local/state issues.	

Table 2. Suggested Resources for the Curriculum Sourcebook (cont.)

Topic	Number
Part II Regulation, market conditions and public policy (cont.)	
Policy issues	
Monetary.	
Fiscal policy	
Tax policy.	1
License fees.	
Bankruptcy.	
Employment/income policies.	
Discrimination.	
Part III Acquiring family resources	
Identifying resources available for meeting family goals	
Net worth	
Human capital	1
Community resources	
Money--income flow	
Earned money income--salary/wage.	
Other money income.	
Non-market real income.	
Adjusted costs of goods	

Research

Key research will be identified and, where appropriate, included (whole or as an abstract) in the Research Section of the Curriculum Sourcebook. Two purposes are to be served by this process: the identification of particularly relevant information, and identification of voids in family financial management research.

The October letter to the specialists solicited input relative to significant research they use in development of materials and/or programs and their perception of "most-needed research" for effective family financial management research.

The specific research was sent or they sent specific bibliographic data to facilitate our retrieval of the information at Purdue. See Table 3 for current status of research recommendations.

Table 3. Suggested Research for the Curriculum Sourcebook

Topic	Number
Part I Management of resources	
General management process	
Decision-making	7
Planning.	
Evaluating.	
Communicating	

Table 3. Suggested Research for the Curriculum Sourcebook (cont.)

Topic	Number
Part I Management of resources (cont.)	
Specific skills	
Obtaining financial resources	1
Allocating income	2
Adjusting to different income levels.	
Planning for consumer risk and uncertainty.	
Managing property	4
Purchasing goods.	3
Part II Regulation, market conditions and public policy	
Regulation and safety of consumer goods	
Goods	
Services.	
Consumer rights and responsibilities	
Rights.	
Responsibilities.	
Consumer responsibility in the marketplace.	
Consumer assistance with problems	
Price and market conditions	
Consumer Price Index.	
Cost-of-living adjustments.	
Economic indicators	
Economic system	
International/national trade interaction with family economic well-being	
Clothing.	
Food.	
Household equipment	
Oil	
Household textiles.	
Local/state issues.	
Policy issues	
Monetary.	
Fiscal policy	
Tax policy.	
License fees.	
Bankruptcy.	
Employment/income policies.	
Discrimination.	
Part III Acquiring family resources	
Identifying resources available for meeting family goals	
Net worth	
Human capital	4
Community resources	

Table 3. Suggested Research for the Curriculum Sourcebook (cont.)

Topic	Number
Part III Acquiring family resources (cont.)	
Money--income flow	
Earned money income--salary/wage.	
Other money income.	
Non-market real income.	
Adjusted costs of goods	2

Again, articles were reviewed for inclusion. Where there were questions, the advisory committee has been asked to provide input in terms of the relevance of the particular research.

Consistently throughout the project, we have faced the dilemma of including too little or too much information. Providing that information which is helpful, while not providing so much information that agents and/or specialists who try to use the curriculum sourcebook will find themselves in an information-overload situation, has been a big problem throughout the project.

Data system

The third part of the Curriculum Sourcebook, the data system, will include approximately twenty pieces of data considered critical to a meaningful presentation of the subject matter in each of the three sections of the outline. The number of "data topics" is not rigid, but is a target for a manageable number.

The advisory committee is establishing priorities for inclusion. They are identified in Appendix B.

Current data will be included along with suggested sources for revising the data with resources available in local communities. We hope to suggest a way that will be available in local libraries. Identification of specific documents should make this a more easily accomplished activity for agents.

Priorities

The final section of the Curriculum Sourcebook deals with the setting of priorities for the decade. A letter was sent in late August to specialists throughout the nation, asking for priorities for the decade. The priority indicated by specialists could be a personal or a state priority. Appendix C provides a summary of suggested priorities.

Three periods of time for the priorities were identified: 1983-85, 1986-88, and 1989-91.

The advisory committee, in a conference call, discussed the priorities and came up with the following statement of priorities for the decade. Each priority will have several subtopics within it which can be the focus of evaluation strategies to be made available as they relate to the priorities. See Table 4.

Table 4. Priorities Established for the Period 1983-1991

<u>Year</u>	<u>Priority</u>
1983-85	To improve management skills to maximize and extend income to help families cope with changing family circumstances and economic conditions.
1986-88	To develop skills in use of technology to conserve, use, and manage family financial resources.
1989-91	To develop family-member skills in identification of the constraints that government places on consumers in the selection of consumer goods (including services), i.e., housing, food, clothing, transportation.

Evaluation strategies for important concepts within each priority area are being developed and presented with objectives, possible resources useful in delivery of the program, and questions, and suggested techniques for gathering data to assess the results of the program. Data obtained using the suggested techniques can be additive and should be useful at both state and federal levels in explaining program impact.

Conclusion

It is expected that the project results will be distributed in the early spring of 1983. Copies will be sent to state Extension home economics staff. Each state will receive Sourcebooks for each county office and for each specialist and state leader.

An assessment of the overall usefulness of the sourcebook will be made in the late fall of 1983 or early spring of 1984.

We hope the sourcebook will be comprehensive, but not complicated, and relevant, not redundant.

Appendix A - FINANCIAL RESOURCE MANAGEMENT TOPIC OUTLINE

- I. Financial Management
 - A. General Management Process
 - B. Specific Skills
- II. Regulation, Market Conditions and Public Policy
 - A. Regulation and Safety of Consumer Goods (including Services)
 - B. Consumer Rights and Responsibilities
 - C. Price and Market Conditions
 - D. International/National Trade Interaction with Family Economic Well-Being
 - E. Policy Issues
- III. Family Resources: money, personal and real property, knowledge, skills, time, personal energy
 - A. Identifying Resources Available for Meeting Family Goals
 - B. Money - Income Flow

Appendix B - MANAGING FAMILY FINANCIAL RESOURCES

Data and sources being considered for support of the first part of the outline are: median disposable money income/wage, use of consumer credit for specific consumer goods (automobiles, furnishings, equipment), sources of credit being used, current credit costs for consumer goods and housing, spending patterns for subgroups in the population (urban, rural farm and non-farm families, older families), rate of savings for families, number of families using family financial counseling services, rates of bankruptcy, life insurance in effect, rates of health insurance ownership, group health insurance provisions, rates of establishment of and use of wills and estate planning to transfer property, rates of home ownership, rates of home rental, budget data for different income and family types, costs of funerals, rates for Social Security withholding, and rates for Medicare withholding.

Regulation, market conditions and public policy

Data and sources being considered are: dollar cost of providing regulatory services (FTC, Postal Service, FDA, as examples), rates of foods/drugs identified as hazardous by agencies, rates of consumer complaints to federal agencies, use of Better Business Bureaus, use of Consumer Price Index information, rates of inflation, value of real income/wage, Federal Reserve rates, costs of taxes (sales, property, income, Social Security), price trends of significant groups of consumer goods, and value of the dollar earnings.

Identifying and acquiring family real income

Data and sources being considered are: net worth of families, present liability patterns of families, value or cost of human capital in terms of education and the differences in terms of lifetime earnings, trend data for community resources, wage and salary information for men and women and for different family types (two-worker, single-parent households), value of home-based industry, proportion of income from investment earnings (interest, dividends, capital gains, rents), inheritance patterns in terms of income, value of Social Security at retirement (with disability), value of household production, value of person at home providing services in contrast to net value of gainful employment when children are present at home, patterns of barter and estimated value of barter, value of food stamps, and value of housing subsidies and differences in housing costs based on subsidies.

Appendix C - FAMILY RESOURCE MANAGEMENT PRIORITIES FOR THE EIGHTIES

SUMMARY OF PRIORITIES

1983-85

Improving Resource Management Decisions of Young Families	(12)
Extending Family Income via Household Production	(9)
Decision-Making Skills	(8)
Coping with Unemployment	(7)
Estate Planning	(5)
Savings/Investing	(5)
Coping with Inflation/Changing Economy	(5)
Public Policy/Government Regulations and Intervention	(4)
Conservation and Management of Resources	(4)
Credit and Debt Management	(4)
Time Management	(3)
Budgeting	(3)
Changing Life Styles	(2)
Housing	(2)

1986-88

Conservation and Management of Resources	(6)
Public Policy/Government Regulations and Intervention	(6)
Optimizing or Extending Family Income via Household Production	(5)
Improving Resource Management Decisions of Young Families	(4)
Savings/Investing	(4)
Technology/Computers	(3)
Retirement Planning	(3)
Decision-Making Skills	(2)
Housing	(2)
Consumer Education, Protection and Rights	(2)
Family Values as They Influence Money	(2)

1989-91

Improving Resource Management Decisions of Young Families	(4)
Public Policy/Government Regulations and Intervention	(3)
Optimizing or Extending Family Income via Household Production	(2)
Simplifying and/or Changing Life Styles	(2)
Consumer Education, Protection and Rights	(2)
Retirement Planning	(2)
Protection/Insurance	(2)

J. Dawson Ahalt, U.S. Department of Agriculture

1983 Agricultural Outlook Conference, Session # 7
Washington, D.C.

For Release: Monday, November 29, 1982



Another Tough Year for Agriculture Ahead

Next year is expected to be another difficult one for agriculture--despite easing in cost pressures, 1983 is likely to be the fourth poor income year for many farmers.

Many forces have combined during the early eighties to increase world and U.S. agricultural supplies while depressing demand for food and fiber. With prices for the major crops at the lowest levels since 1978, and income reduced for the third year running, American farmers are under financial strain. Unfortunately, our current assessment of the supply and demand factors for 1983 suggests that any improvement will come very slowly.

To be sure, there are bright spots in the 1983 outlook. Livestock prices strengthened this year and grain and oilseed prices have moved up in the past few weeks. Reduced inflation and lower interest rates will encourage demand and will greatly ease pressure on farmer's expenses and borrowing costs. The global economy is likely to make a gradual recovery in 1983 and beyond without rekindling rapid inflation.

Supply adjustments also are likely. Signs point to reduced plantings of most major U.S. crops next year and a further drop in domestic livestock production. Rising domestic use of crop products and potential for some improvement in the volume of U.S. farm exports should slow the buildup in U.S. stocks.

Unfortunately, given the weakness of the world economy and the size of crop stocks, the expected strength of these corrections would not be enough to greatly improve commodity prices next year. The forces that led to the huge buildup in stocks and depressed global demand are deeply entrenched, and will require time to be reversed.

We thus foresee, barring the unexpected, continuing pressure on crop prices, modest gains in livestock prices, and continued low returns in farming in 1983.

Farm programs were modified this fall in light of these prospects... Deficiency payments for 1982 crops were accelerated, and advanced farm program payments offered to farmers who comply with acreage reduction and paid diversion programs for 1983. Grain producers who participated in 1982 farm programs are making heavy use of the farmer-owned grain reserve, greatly restricting near-term marketable supplies. Each of these measures will help, but even collectively they may not be fully adequate when compared with the problems at hand. There are limits as to how much farmers can restrict production, how high crop and dairy product stocks can be piled, and how expensive farm programs can become.

Consequently, policymakers are closely examining the causes of our present dilemma and options for short-term adjustments in farm policies. As we examine the outlook for 1983 in detail, I would ask each of you to consider not only what lies ahead, but what policy solutions can be found to ease the stress of this period.

Farm Output Expanded for a Decade

Many of the forces that shaped our present difficulty are longer term factors in U.S. agriculture and in world economic relationships. That's why it's so difficult to counteract them or offset their effects on farmers in the short term.

The tight world food situation of the early seventies triggered a decade of expansion by American farmers and increasing reliance on foreign markets, which today account for every third acre that farmers plant.

U.S. farm exports tripled between 1971 and 1981, in response to rapid growth in the world economy and population. Farm exports were enhanced by the declining value of the U.S. dollar during this period. Our own economy was generally bouyant, producing strong growth in domestic demand, especially for livestock products. Farm prices rose through the seventies. The underlying price support levels were ratcheted upward. This ratcheting, coupled with the appreciation of the dollar, has elevated the price "floors" beneath grain, cotton, oilseed, sugar, and dairy prices.

With plentiful and easy credit and rising land values during the seventies, farmers found it advantageous to escalate borrowing and make heavy capital investments. Results were dramatic indeed. Between 1971 and this year, farmers increased the area planted to principle crops--excluding hay--by more than 60 million acres. Heavier input use, availability of yield-boosting technology, and recent ideal weather have pushed yields to new heights. Crop production per acre today is 17 percent above that of a decade ago. The combined effect of expanded crop acreage and rising yields has been to thrust U.S. crop production upward by fully one-fifth over the past decade. Livestock production also expanded, rising by 7 percent over the period.

As prices and land values rose, farmers who borrowed in order to expand tended to earn a better rate of return than those with higher equity. Rapid inflation in recent years fueled additional borrowing to cover annual production expenses. Consequently, farm debt has tripled in the last decade, and interest payments now account for one dollar in every seven that farmers spend for their business.

Prolonged expansion was followed by a period of reduced incomes during the last 3 years. This has greatly increased the difficulty now of making large adjustments in production in response to current conditions.

Crop producers who have heavy debt payments to meet and large investments to protect have less flexibility in reducing production. Last year, rather than cut acreage, most grain producers opted to forego participation in farm programs.

For the last several years, dairy farmers have been responding to rising milk support prices rather than to actual demand levels. They have increased the dairy herd and production per cow. Now, under pressure to

reduce milk output, they have three hard choices: cutting back production, switching to other enterprises, or finding work off the farm.

Livestock producers were forced to cut output this year after several years of unfavorable returns. Now livestock prices are up and feed prices down. Yet apparently because many producers are financially strapped, it appears they are not gearing up for expanded production.

Global Demand Has Changed Course

American farmers have become especially vulnerable to fluctuations in world trade and world market prices. For the past several years, U.S. and world crop production have set new records, but global demand for agricultural products has switched from a high-growth path to one of little or no growth.

Meanwhile, the sources of strength in our agricultural exports have been eroded by other factors: financial instability in a number of countries, the strong U.S. dollar, losses related to the Soviet embargo and continued East-West political tensions, and unfair trade practices by our competitors.

The world is in the grips of recession. The industrial market economies barely grew this year, and the U.S. economy declined. Developing countries, important to agricultural trade, are growing by about 2.3 percent in 1982, well below normal.

We currently expect the U.S. economy to pick up as next year progresses, achieving real growth of 2 to 3 percent for all of 1983. The Federal Reserve has permitted faster growth in the money supply for the time being, but will probably target for moderate restraint in growth of the money supply next year. This would limit the recovery in economic activity, as well as helping us to hold down inflation.

U.S. recovery will help stimulate other economies, but the process will take time. The industrial market economies may grow only around 1-1/2 percent in 1983, and developing countries by 3-1/2 percent. But even this stimulus to incomes, and hence demand for farm products, will be tempered by lingering high unemployment levels.

A large number of countries have had financial crises that have forced them to curtail food imports. The financial problems of Eastern Europe and Mexico have been the most devastating to our trade. U.S. grain exports to these markets dropped by 8.0 million tons in the past year, compared with the 1979-81 average.

Foreign investors, seeking a haven of safety and high interest rates, have been driving up the dollar's value. Even though interest rates in the United States have recently dropped, they still offer favorable real returns to foreign investors. With an economic recovery in prospect here, the dollar is likely to continue strong in 1983.

The strong dollar increases the price of our farm products to foreign customers. Over the past year, our farmers have received sharply lower prices, but after accounting for exchange rates, prices importers pay are rising. Since there's little likelihood of a significant weakening of the dollar, our farm exports will continue to be adversely affected.

Our share of Soviet grain imports slipped from around 70 percent in the late 1970's to 17 percent following the U.S. embargo with the Soviet Union in 1980. It recovered to over 30 percent in the past year. The problem of reliability, coupled with continued East-West political tensions, continues to cloud our trade prospects with the Soviet Union. Although the Soviets harvested a fourth poor grain crop this year, estimated at around 180 million metric tons, grain imports during 1982/83 will be smaller. Thus, the United States will have to work hard to recover a larger share of the Soviet market.

Our farm export markets are being seriously undercut by unfair competition from the European Community and other nations. The EC has become the second largest exporter of farm products by spending upwards of \$7 billion in subsidies.

We have made little headway in our discussions with the EC informally and now in the GATT. We have recently begun a program of "blended credit" that combines interest-free direct credit with government-guaranteed private credit. While small, it indicates that if necessary, we are prepared to take steps to improve the competitiveness of our exports.

Consumption Growth Slower

The world economic problems of the eighties have had a depressing impact on consumption of agricultural products. For example, during the last two decades, global coarse grain consumption rose 16 million tons per year as diets were upgraded with more animal-product foods. Yet since 1979/80, growth in meat production has stopped and coarse grain consumption has nearly flattened out. World wheat consumption increased by over 10 million tons annually during the past two decades, but may rise only 10 million tons for the four years between 1979/80 and the end of the current season. Until economic conditions in importing countries improve, consumption growth will continue to lag. Cotton consumption is in a similar bind, since mill use is sensitive to economic conditions. World soybean usage, however, has continued about on trend.

U.S. farm exports dropped for the first time in 13 years during the fiscal year ending in September 1982. Volume slowed 2 percent below the previous fiscal year, but value plunged 11 percent because of sharply lower prices. Corn exports were hardest hit, dropping by 10 million metric tons and \$3 billion. However, cotton exports rose and wheat and soybeans broke earlier volume records. Exports of animal products equaled the record level of the previous fiscal year.

The volume of U.S. farm exports in the next year is likely to increase. Recovery in corn exports and a little further growth for soybeans will contribute to a larger volume of shipments. However, continued low prices may cause value to fall for a second year.

Large Output and Rising Stocks Boost Global Supplies

Following two reduced grain harvests in 1979 and 1980, excellent weather in 1981 pushed world grain production to nearly 1.5 billion metric tons. Larger U.S. crops were an important factor in the global increase. This year, with widespread good weather, world grain production surpassed the 1.5-billion-ton mark. U.S. grain output topped its 1981 record. Grain production increased in a number of importing countries, especially the Soviet Union and China.

The weather also contributed to a sharp jump in world production of oilseeds this season, another large sugar crop, and large cotton crops in foreign countries. These weather-related developments will have a negative effect on our trade during the next year.

With consumption of agricultural commodities depressed by deteriorating economic conditions for the last several years, rising production has caused stocks to accumulate sharply, both globally and in the United States. We forecast that by the end of the 1982/83 marketing year, world grain stocks are likely to reach about 250 million tons, 75 million tons higher than 2 years before. This would be equal to 2 months' supply of grain, the highest global stocks-to-use ratio in more than a decade. The measure of food security that these stocks would provide must be balanced against their lopsided distribution, since nearly 150 million tons--or nearly 60 percent--would be located in the United States.

U.S. stocks of nearly all major commodities are expected to escalate. By the end of the current 1982/83 crop year, compared with 2 years earlier, our ending stocks of rice and coarse grain will have tripled. Cotton stocks will be two-and-three-fourths times larger than 2 years before. Wheat stocks will be half again as large, and U.S. soybean stocks will have risen by 40 percent. Thus, as farmers contemplate production options for 1983, they will have to reckon with large carryover stocks.

The market impact of grain carryover stocks will be moderated by the farmer-owned grain reserve. In fact, as we enter the next marketing year three-fourths of the U.S. grain stocks are expected to be either in the reserve or under CCC ownership. This will limit free supplies, thus aiding prices.

We are strongly advising our farmers to take advantage of 1983 farm programs in order to reduce acreage and better balance supply and demand. We are also concerned that other major food exporting nations are not exercising similar measures of restraint.

I would now like to briefly look at prospects for the major commodities in the 1982/83 marketing year.

Some Pickup in U.S. Coarse Grain Exports Expected

Larger coarse grain crops in the United States, Europe and the Soviet Union are offsetting lower production in Mexico and expected declines in the Southern Hemisphere. World coarse grain trade is likely to be slightly above last year's level. U.S. coarse grain shipments may rise about a tenth because reduced output in other exporting countries is limiting competing supplies.

We look for partial recovery in corn exports and larger domestic feed and industrial corn use, adding up to a 400-million bushel gain in total corn use in 1982/83. Even so, ending corn stocks next fall could rise nearly 1.1 billion bushels, to over 3.4 billion bushels. Reserve and CCC holdings may rise by 1 billion bushels.

Corn prices for the 1982 crop are expected to average below last year's \$2.45 per bushel and the 1982 loan rate of \$2.55. Low corn prices are likely to hold down prices of competing feed grains.

Food Grain Prospects Soft

World food grain production increased 1 percent this year. Record yields boosted wheat output more than 3 1/2 percent, but smaller U.S. acreage and lower yields, plus a poor monsoon in Asia, reduced the world's rice crop.

Next year's gain in consumption of food grains will be limited by the impact of sluggish economic conditions, and especially the impact on the ability of developing countries' ability to pay for imports. Since developing countries take an increasing share of world food imports, their financial situation has serious consequences for our exports.

U.S. wheat exports are likely to hold up well despite good crops in exporting countries--except in Australia, where wheat production may be down by half because of drought--and despite larger crops in Eastern Europe, the Soviet Union, and other major importing countries. Look for larger U.S. shipments to North Africa and the Middle East and to India, which may purchase 5 million tons, as well as continued large sales to China.

World wheat stocks may increase by a tenth this season, with most of the buildup in the United States, where ending stocks next June may exceed 1.4 billion bushels, the largest since the early sixties. Prices during the first half of the marketing year have averaged 20 cents below the \$3.55 per bushel loan level and may average a little below it for the season.

There is little prospect that our competitors will reduce wheat plantings for 1983 harvest. Moreover, weather thus far in wheat growing regions has been generally favorable. These indications suggest that production of wheat outside the United States in 1983 could rival this year's record. This could limit the likelihood of improvement in U.S. trade during 1983/84.

Although U.S. rice producers trimmed 1982 output sharply, larger beginning stocks pushed total supplies for 1982/83 to a record 202 million hundredweight, well above prospective use. With little or no gain in exports, ending stocks next August are expected to be large and prices are likely to remain depressed.

Unprecedented Oilseed Crops

World production of major oilseeds increased nearly 8 percent this year to an unprecedented 185 million metric tons. A 15-percent larger soybean crop plus a record sunflowerseed harvest have boosted U.S. oilseed production.

A smaller carryin held the increase in total U.S. soybean supplies for 1982/83 to 11 percent. U.S. supplies of sunflowerseed and flaxseed also are up from a year ago, while supplies of peanuts and cottonseed are smaller.

Consumption of oilseeds, both domestically and worldwide, is increasing in response to low prices--especially in relation to competing feedstuffs. However, gains in both domestic use and exports of U.S. soybeans will be limited by reduced U.S. hog numbers, weak economic activity worldwide, and larger world supplies of competing oilseed products.

From \$6 per bushel last season, prices for the 1982 crop are currently forecast to average between \$5.25 and \$5.75. Price declines are also likely for the other U.S. oilseeds.

U.S. soybean ending stocks are rising sharply to about one-fifth of annual use, well above more typical levels. Soybean plantings in 1983 are likely to be below last spring, when higher prices encouraged soybeans on farms with diverted grain or cotton acreage and some failed cotton land was late-planted to beans. Even if smaller plantings and more typical yields cut production next year, the expected large stocks could maintain supplies for 1983/84 near their present high level.

Cotton Prospects Deteriorating

In recent months, the estimate of U.S. cotton production has been raised to 11.9 million bales, primarily because of record-breaking yields. Sluggish domestic and foreign demand, strong competition from imported textiles, and an excellent harvest in China have reduced prospective combined domestic use and exports to 11.2 million bales. U.S. ending stocks may rise to 7-1/2 million bales, the largest since 1967.

China purchased 850,000 bales of U.S. cotton last season, but may buy virtually none this season. This, combined with sluggish use in other major Asian markets, has lowered export prospects. However, smaller 1982 crops in other exporting countries and recent sales under the new U.S. blended credit program will preserve our one-third share of world trade.

Domestic cotton prices have been forced down towards the loan rate, which is likely to provide an effective floor this season. Given higher target prices and loan rates next year and low prices for alternate crops, a high proportion of cotton growers may opt for the 20-percent acreage reduction program. Even so, harvested cotton acreage and production may exceed this year's low level.

Surplus Pressures World Sugar Prices

A sharp jump in world sugar production in 1981/82 to 100 million metric tons has pushed beginning stocks for this season above 35 million tons, equal to almost two-fifths of annual consumption. World production in 1982/83 may be only slightly lower, driving ending stocks up to as much as 42 million tons by next year. World raw sugar prices may average only 6 to 8 cents per pound for 1982/83. Prices paid to U.S. growers, however, are being effectively supported at around 21 cents per pound by the sugar stabilization program.

U.S. production for 1982/83 is down 7 to 8 percent, reflecting a sharp drop in beet acreage and lower beet yields. Quotas kept excess world sugar supplies from flooding the higher priced U.S. market in 1981/82. In 1982/83, U.S. supplies are expected to fall further as production will likely decline and imports should continue to drop.

Meat Production Declines

An 11-percent cutback in pork output triggered a 3-percent decline in total output of red meats and poultry this year. In 1983, total output may drop 1 percent further. Despite improved prices over a year ago and low production costs, producers are hesitant to expand. Larger sales of gilts by pork producers and heavy cow sales from mixed enterprise areas suggest that producers may be raising cash for current needs rather than increasing breeding herds, or are having a hard time qualifying for additional credit.

Poultry production may be up a little next year, but pork output may drop further and beef output may return to the lower 1981 level. Broiler and turkey prices could average slightly higher, but egg prices may show further weakness.

Small hog inventories point to a sharp cut in first-half 1983 pork output. Reduced farrowings, at least through winter, may hold down second-half production.

Lower feed and feeder cattle prices, and higher fat cattle prices have put cattle feeders in the black for the first time in several years. Feedlot placements are up sharply and fed cattle production will rise next year. But much lower nonfed and cow slaughter could reduce total beef output slightly.

Even with tighter meat supplies, producer prices may improve little over this year's levels. Per capita red meat consumption may drop again next year and reach the lowest level since the midsixties, reflecting the reduced supplies.

Although consumer incomes are up in nominal terms this year, real purchasing power has increased very little since 1980. High unemployment and short work weeks will continue to restrain purchasing power during the first half of next year. But retail demand for livestock products should strengthen in the second half as increasing employment and a longer work week boost buying power.

Milk production increased 2 percent in 1981/82 as both cow numbers and output per cow rose. The milk cow inventory at the beginning of the 1982/83 marketing year was larger than a year earlier, providing a basis for continued high production in 1982/83. Feed grain prices are expected to remain low during the coming year, but returns over concentrate costs will decline as the deductions from producer marketings authorized in new legislation begin in December.

Even so, with limited alternatives, the decline in milk cow numbers may be slow. Cow numbers are not likely to drop below the year-earlier level before next summer. Moreover, output per cow is likely to continue to rise. These factors may result in an increase in 1982/83 milk production of 1 to 3 percent.

Commercial disappearance of dairy products rose almost 1-1/2 percent in 1981/82. With very modest increases in retail prices this year, commercial use may rise another 1-1/2 percent. This increase, along with some additions to commercial stocks, could still leave Commodity Credit Corporation purchases near the 1981/82 level of nearly 14 billion pounds on a milk equivalent basis.

Financial Conditions

We are now in the third consecutive year of severe financial problems in agriculture. While conditions vary widely among producers, geographic regions and the type of commodity, many farmers are experiencing difficult cash flow problems. These financial problems extend beyond the farm gate and affect farm suppliers and other farm-related businesses.

In terms of the key financial variables, cash receipts to farmers this year are lagging last year's \$143.5 billion by 1 percent. Although the reduction in inflation and declining interest rates have slowed the rise in cash expenses, farmers are spending slightly over \$1 billion more on production outlays in 1982 than the \$115.8 billion of last year. This more than offsets the additional CCC loans and direct payments, and limits the net cash income in farming to about \$31 billion, down slightly from the 1981 level, and the lowest since 1977.

Farmers' net income in 1982 is expected to total about \$19 billion compared with around \$25 billion in 1981. With severe pressure on farm prices, coupled with substantial cash flow problems, the value of farm assets has declined significantly. In the past year, as farmers' debts continued to rise, total liabilities increased 8 percent. This will reduce the total equity in agriculture on January 1, 1983, to around \$850 billion, the lowest level since 1980. The debt to asset ratio in agriculture, while still low compared with other industries, jumped to about 20 percent compared with around 16 percent in the late 1970's.

Looking on to 1983, it is difficult to accurately forecast the financial performance for agriculture at this early date. On balance there is little basis for much improvement. Cash receipts to livestock producers are expected to improve slightly, reflecting prospects for somewhat smaller output and a modest firming in demand. On the crop side, with prices expected to remain under pressure it will be difficult for marketing receipts to move above this year. At the same time, prospects for further progress against inflation and lower interest costs are encouraging, and suggest that little increase in production expenses is likely. These tentative indications give little reason to expect cash flow or net returns in farming to improve much from 1982 levels. However, a sudden change in weather patterns that might affect global crop production, or a major change in farm programs for the year ahead could materially alter this outturn. Needless to say, speculation on any of the financial aggregates in agriculture for next year is highly uncertain at this stage.

Food Prices Slow

Retail food prices increased by 4-1/2 percent this year, the smallest increase in 6 years, and averaged well below the rate of increase for nonfood items. Annual food price increases have steadily dropped from the 11-percent peak in 1979. Abundant supplies of farm products, stagnant consumer incomes, and moderating costs of processing and marketing food all helped slow the cost of food prices at retail.

A similar situation should prevail next year. The general inflation rate is likely to slow further, limiting the rise in food processing and marketing

costs. Food supplies from crops will be abundant and fruit supplies, tight in 1982, should expand. Livestock supplies are not expected to expand, and retail prices will increase moderately. On the whole, larger food supplies will tend to offset somewhat stronger demand that develops as the economy begins to recover. Thus, overall retail food prices are likely to increase in the range of 3 to 6 percent during 1983.

The Challenge Ahead

In the past, agriculture has been able to weather slack years through use of a combination of farm programs that take some supplies off the market, encourage farmers to restrict their output, and temporarily supplement farm income through price and income supports.

Today a complex set of circumstances is frustrating these farm policy mechanisms. As we have seen, many of the forces that are bloating world commodity supplies and blunting demand for American farm products are beyond our control. For that reason, the traditional policy prescriptions, while still helpful, may no longer be sufficient either to tighten up supplies and markets, or to provide an adequate safety net for producers. The cost of these programs is rising geometrically at a time when the Federal budget must be brought into line.

Thus, it is not just farming that is under pressure, but farm policy as well. That pressure falls on the entire agricultural community--policymakers, lawmakers, farmers and their organizations, and you who are attending this conference in your capacity as outlook specialists, professors, extension specialists, or communicators. Together, we must pool our ingenuity to find the combination of farm programs that will get us through this rough period. More challenging still, we must avoid nearsighted or inflexible solutions that only magnify problems a few years in the future. Earlier farm policies have contributed to the explosion of overproduction that now confronts us.

The demand for effective solutions, whatever their source, has never been stronger. Our challenge is not just to leave this conference with another sheaf of forecasts for those we advise, but to use the outlook material as the starting point in a search for farm policies adequate to our present situation.

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OUTLOOK IN BRIEF

For the second consecutive year, world feed grain (coarse grain) production significantly exceeds consumption. The resulting buildup in ending stocks is expected to leave 1982/83 world stocks 26 percent above the 1981/82 level and 75 percent above the level of 2 years ago. Stock buildup in the United States has been particularly sharp, with this country forecast to hold three times the amount of feed grain stocks at the end of this year as it did in 1980/81.

Northern Hemisphere feedgrain production in 1982 is estimated to be at a record high in spite of poor crops in such major producers as the USSR and Mexico. Other major increases in production were registered in the EC-10, Eastern Europe and China. The United States harvested a second consecutive record crop on reduced acreage, while Canadian production held near last year's record level. Among the major producers in the Southern Hemisphere, Australia and Argentina are likely to harvest smaller crops.

Global production of coarse grains in 1982 is expected to exceed use by 4 percent, the second consecutive year of substantial surplus. Over the past 2 years, output has exceeded use by 63 million tons, resulting in a tripling of stocks in the United States but an actual decrease in stocks held elsewhere. Feed use of coarse grains has slowed somewhat from the strong growth of the 1970's as the effects of the weakened global economy were felt.

The record coarse grain crop worldwide in 1982, along with diminished expansion in the livestock sectors of a number of countries, has led to a slowdown in coarse grain trade. Trade of around 99 million tons during July-June 1982/83 would be the second year of trade decline and a 7 million-ton reduction from the record 1980/81 level. Imports in key importing areas such as Eastern Europe and Mexico are likely to be held below potential because of financial constraints. Imports by the USSR are expected to remain high, but could fall several million tons below the record 1981/82 level. Growth in import demand is expected from some Asian countries, principally China and South Korea. The slowed import demand and larger exportable supplies are leading to keen competition among exporters and reduced prices for importers.

The large carryover and slow demand has put heavy pressure on prices. Coarse grain prices worldwide have fallen to their lowest point in 10 years, in spite of the U.S. program to hold supplies from the market through the farmer-owned-reserve program.

WORLD COARSE GRAIN SUMMARY
(Million Metric Tons)

	: 1978/79	: 1979/80	: 1980/81	: Estimated: 1981/82	: Forecast 1982/83
World					
Production	753.6	741.3	730.0	765.4	780.0
Utilization	748.2	740.8	741.4	731.2	751.2
Ending Stocks	91.0	91.5	80.1	114.3	143.1
Stocks/Util. (%)	12.2	12.4	10.8	15.6	19.0
Trade	90.2	100.9	105.5	103.7	98.8
United States					
Production	222.1	238.7	198.4	248.9	253.0
Utilization	157.2	161.4	147.3	152.2	157.8
Exports (Oct./Sept.)	60.2	71.4	69.5	58.6	63.4
Exports (July/June)	56.9	71.6	72.4	61.4	61.5
Ending Stocks	46.4	52.7	34.7	73.1	105.1
U.S. Stocks/World Stocks (%)	51.0	57.6	43.3	64.0	73.4
Soviet Union					
Production	105.3	81.1	80.5	72.0	85.0
Utilization	113.2	99.5	100.5	97.6	104.0
Imports	9.9	18.4	18.0	25.6	19.0
Exports	1.0	--	--	--	--
Stocks Change	1.0	--	-2.0	--	--
Other Major Exporters ^{1/}					
Production	56.5	50.7	67.2	64.9	63.0
Utilization	36.0	35.6	36.6	37.7	37.5
Exports	23.1	20.8	22.7	32.5	27.7
Ending Stocks	10.6	7.0	10.3	8.2	9.0
Rest Of World					
Production	369.7	370.8	383.9	379.6	379.0
Utilization	441.8	444.3	457.0	443.7	451.9
Imports	80.3	82.5	87.5	78.1	79.8
Exports	5.9	8.7	13.3	12.6	7.7
Net Imports	74.4	73.8	74.2	65.5	72.1

^{1/} Canada, Australia, Argentina, South Africa, and Thailand.

WORLD CORN SUMMARY
(Million Metric Tons)

World					
Production	390.8	423.6	404.4	436.0	443.4
Utilization	389.2	413.7	412.7	406.5	418.3
Ending Stocks	47.6	57.5	49.1	78.7	103.2
Stocks/Util. (%)	12.2	13.9	11.9	19.4	24.6
Trade	65.6	74.1	78.2	71.5	68.8
United States					
Production	184.6	201.7	168.8	208.3	211.6
Utilization	125.6	131.9	123.8	124.5	129.5
Exports (Oct./Sept.)	54.2	61.8	59.8	50.0	54.6
Ending Stocks	33.1	41.1	26.3	60.1	87.6
U.S. Stocks/World Stocks %	69.5	71.5	53.6	76.4	84.9
Other Major Exporters ^{1/}					
Production	20.1	20.5	30.6	22.0	23.5
Utilization	10.9	11.0	10.9	11.9	12.0
Exports	11.5	8.9	11.4	16.1	12.7
Ending Stocks	2.6	1.7	2.2	4.8	2.7
Rest Of World					
Production	186.1	201.4	205.0	205.7	208.3
Utilization	252.7	270.8	278.0	270.1	277.3
Imports	65.6	74.1	78.2	71.5	68.8
USSR	9.6	14.5	11.8	17.4	13.5
Japan	10.9	11.9	14.0	13.0	13.5
EC-10	12.2	11.1	11.6	10.1	8.9
Other West Europe	7.8	8.6	8.5	8.6	8.3
East Europe	5.5	8.4	8.1	5.5	3.8
Mexico	1.3	2.8	4.8	0.8	2.3
South Korea	2.6	2.4	2.5	2.4	2.5
Taiwan	2.6	2.4	2.7	2.5	2.8
Others	13.1	12.0	14.2	11.2	13.2
Exports	65.6	74.1	78.2	71.5	68.8

^{1/} Argentina, South Africa, and Thailand.

PRODUCTION

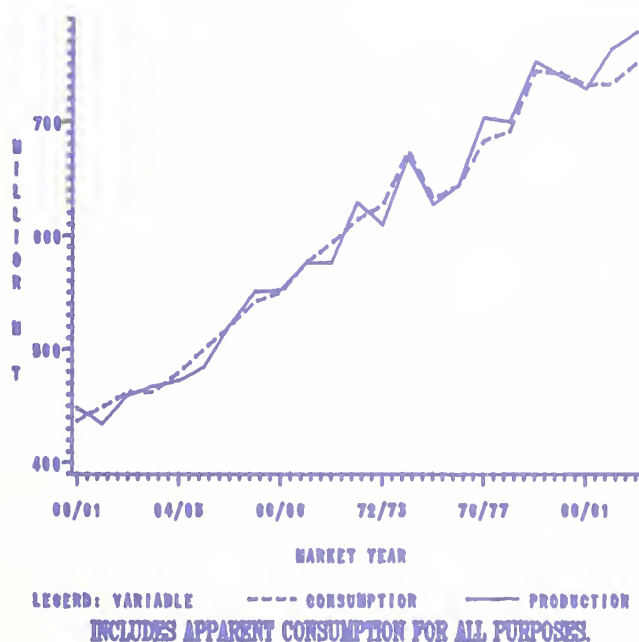
World coarse grain production is setting its second consecutive record year. Production in Western Europe, Eastern Europe and the United States increased significantly, helping to boost world output to 780 million tons, compared with 765 million the previous year. Expanded yield accounted for all of the increase, as global coarse grain acreage fell slightly from the 1981 level.

In the Northern Hemisphere, crop shortfalls in Mexico and the USSR were not sufficient to offset high outturn elsewhere. Current estimates put the Mexican crop 40 percent below last year's level. For the USSR, it was the fourth poor crop in a row, although an improvement over the disastrous 1981 crop.

In the Southern Hemisphere, early indications are that output could fall somewhat below last year's, because of acreage reductions from drought and planting of alternative crops. Much attention will focus on these countries' crop conditions in the upcoming months to see whether they add to an already surplus global coarse grain supply situation.

The combined boost in area and yields over the past decade provided assurance that the sharply rising world coarse grain demand for food and feed could be met, but became at least a temporary problem when the growth in consumption began to level off in 1980. The divergence between production and consumption growth over the past 2 years had led to a considerable stocks buildup, almost entirely in the United States.

WORLD COARSE GRAIN PRODUCTION VS. CONSUMPTION



CONSUMPTION

Global coarse grain consumption is forecast to reach 751 million tons, an increase of 3 percent from the previous year following 4 years of flat use. Consumption in 1982/83 is expected to point upward again as lower prices and some improvement in the world economic situation occurs, but it will not expand fast enough to keep pace with the growth in production.

Much of the increase in forecast use is due to larger harvests in the USSR, Eastern Europe and China, where greater availabilities will add directly to domestic consumption. Some increased use is also anticipated in the United States as the large supplies and low prices encourage feeding.

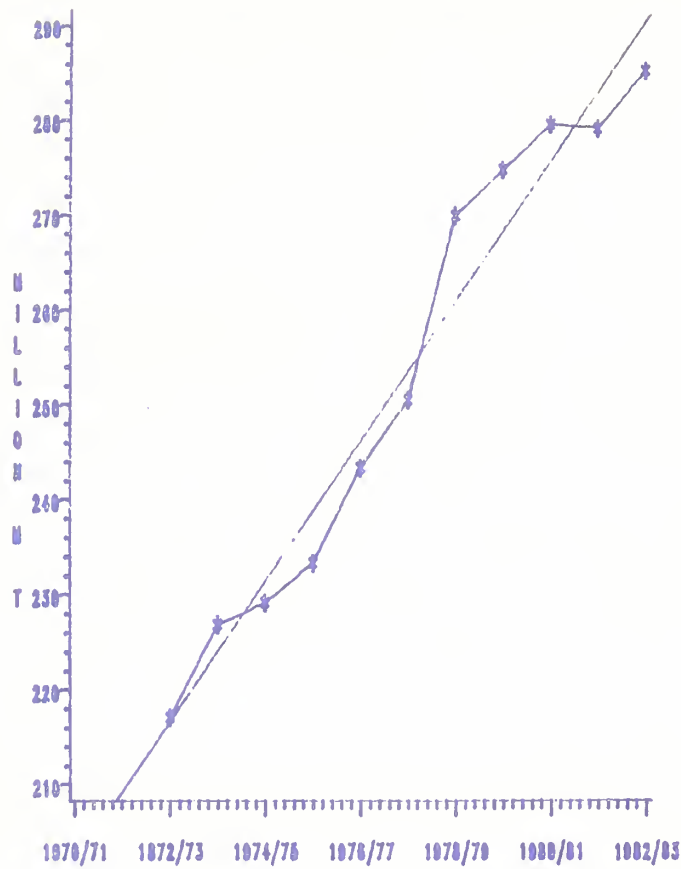
The strong global consumption growth which fueled the quadrupling of coarse grain trade over the past 20 years and gave incentive to added output leveled off in 1979/80 and has continued to be relatively stagnant. The slower pace of consumption growth was in part a response to reduced domestic availabilities in the USSR and a downturn in the U.S. livestock cycle. However, demand growth outside of these two countries also slackened. This slackening growth was influenced by world economic conditions, rising prices for coarse grains, increased use of non-grain feed ingredients and hard currency and credit limitations in important consuming areas such as Eastern Europe and Mexico.

STOCKS

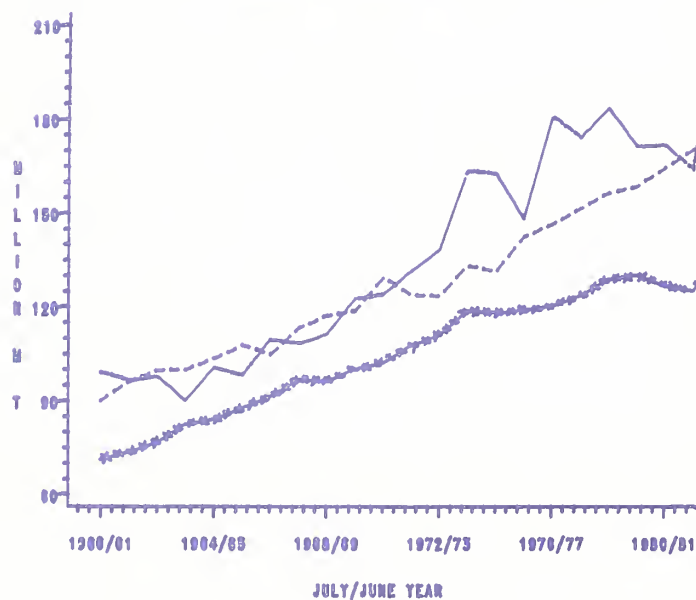
Global coarse grain stocks are forecast to grow to a record 105 million tons in 1982/83, representing 19 percent of utilization--the highest percentage of stocks to consumption since 1965. More than 73 percent of these stocks will be held in a single country, the United States. Total foreign stocks (excluding China, Eastern Europe and the USSR) are expected to decline 8 percent in 1982/83. Stocks held by major foreign grain exporters are expected to remain virtually unchanged as these countries continue to move all the grain produced rather than hold additional stocks, even at a time of slowing world demand and low prices.

In the United States, while total coarse grain stocks are forecast to exceed the 1981/82 level by 46 percent and 1980/81 by 300 percent, free stocks are forecast to be up only slightly. The bulk of U.S. stocks, and nearly all of their growth, is occurring in the farmer-owned reserve and CCC inventories, U.S. coarse grain stocks in the farmer-owned reserve alone now exceed this year's anticipated exports. Total stocks will equal 165 percent of export volume. Two years ago, total coarse grain stocks in the United States represented about 50 percent of export volume.

WORLD EXCLUDING US AND USSR
GRAIN CONSUMPTION FOR FEED
ACTUAL VS. TREND



COARSE GRAIN CONSUMPTION
BY SELECTED REGIONS



LEGEND: SUBGROUP W EUROPE & JAPAN USSR & E EUROPE
 OTHER IMPORTERS

OTHER IMPORTERS CATEGORY EXCLUDES CHINA

TRADE

World coarse grain trade has declined to around 99 million tons from the record level of 106 million in 1980/81. This estimated volume of trade would represent the second consecutive year of decline in global coarse grain trade, but the fourth highest level on record. The USSR and Eastern and Western Europe account for nearly all of the decreased trade prospects, while the less developed countries (LDC's) and China should show increased import demand in 1982/83. Almost the entire adjustment in coarse grain trade has been in corn, as world barley and sorghum trade have shown continued growth. With about 72 percent of world trade consisting of corn, most of the downward adjustment has come out of U.S. corn exports.

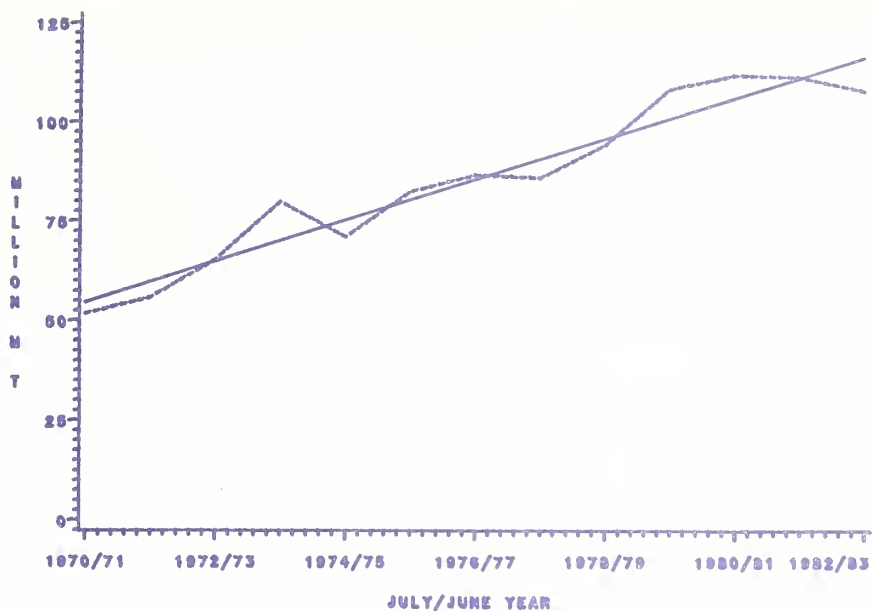
The decline in world coarse grain trade over the past 2 years has exacerbated the stocks buildup. Looking at trade by major region, we see that principal growth in coarse grain trade over the past 5 years has been centered in LDC's, West European countries outside of the EC-10 and Japan, with Eastern Europe and the EC-10 showing decreases. The USSR has been a sporadic element in the picture in spite of the numerous trade agreements signed. However, the overall trend in Soviet coarse grain trade has been a sharply upward one. In the LDC's, growth has strengthened in OPEC countries, while Mexico and Brazil have accounted for much of the fluctuation in that group. With Mexico expected to quadruple its imports compared to 1981/82, this increase is enough to provide for an upturn in overall LDC imports this season. Brazil, on the other hand, is expected to be absent from the import market and will likely export 500,000 to 1 million tons of coarse grains in 1982/83.

The international economic situation will probably continue to have some adverse impact on coarse grain import demand. It is difficult to determine just how significantly or how long this effect on coarse grain trade may last, however. Heavy foreign indebtedness and tight credits were certainly a major factor in East European import demand reduction. Without new credit for agricultural imports, other heavily indebted countries, such as Mexico, likely would need to cut back first on feed and then food grain imports. However, with livestock and poultry consumption increasing as staples in many diets, it is difficult to cut grain imports as an austerity measure when per capita consumption is already low.

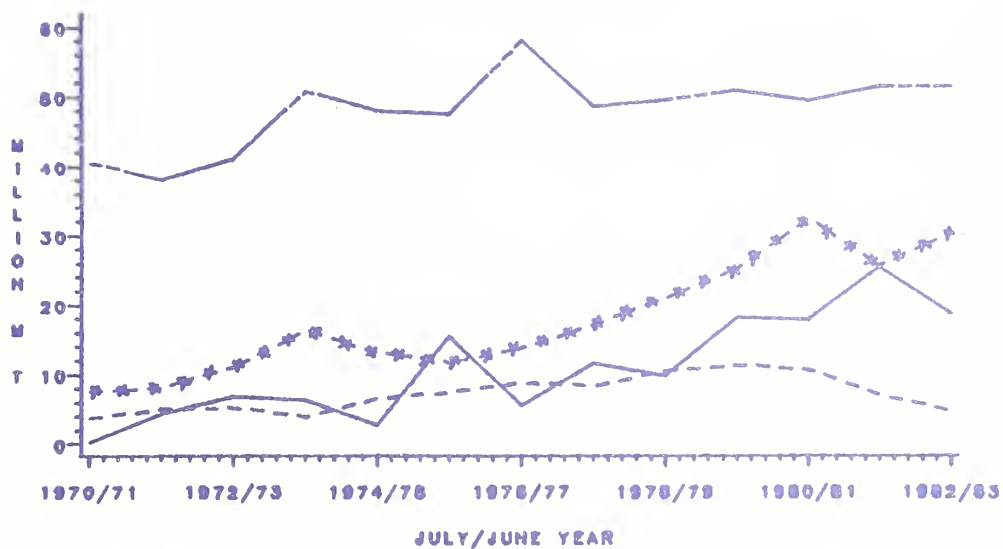
On the export side, coarse grain shipments by major foreign exporters will likely decline 4 to 5 million tons compared with the record 1981/82 year. That year saw exports by these countries surge 43 percent, in part due to record crops but also due to the effects of U.S. partial embargo on grain sales to the USSR. Export prospects for these countries in 1982/83 are somewhat dampened by the decline in world coarse grain import demand as well as by smaller crops in Australia, Argentina and Thailand. Coarse grain exports by these countries are, however, forecast to be at their second highest level ever and 25 percent above the average of 1978/79 to 1980/81.

U.S. coarse grain exports during 1982/83 are expected to be 61.5 million metric tons, or approximately equal to the sharply reduced 1981/82 level. The combination of reduced world import demand and greater foreign export availability has cut into U.S. movement in spite of record availabilities and low prices. After years of picking up much of the growth in trade, the United States saw its share fall in 1981/82 because of greater output by competitors

WORLD COARSE GRAIN IMPORT DEMAND



COARSE GRAIN IMPORT DEMAND BY SELECTED REGIONS



LEGEND: SUBGROUP

— U.S.S.R.

- - - EASTERN EUROPE

— MDC'S

* * * LDC'S

GRAIN AND FEED DIVISION, FAS

and the lingering effects of the Soviet grain embargo. Some of that share is expected to be recovered in 1982/83. The major decline in U.S. coarse grain exports over the past 4 years has occurred in centrally planned countries of Eastern Europe and the USSR. Exports to developing countries also declined in 1981/82, principally due to the sharp reduction in Mexican imports that year.

U.S. Corn and Sorghum
Exports to Selected Regions
(Million Metric Tons)

YEAR	DEVELOPING	DEVELOPED	CENTRALLY PLANNED
October-September			
1978/79	15.7	25.5	18.0
1979/80	22.8	32.4	14.6
1980/81	23.6	31.2	12.4
1981/82	15.7	28.1	12.2

OUTLOOK BY MAJOR REGION

Mexico will need to return to the world market for large coarse grain imports in 1982/83 after sharply reducing imports the previous year. A serious drought reduced the 1982 crop and declining inventories have already led to Mexican purchases of around 2.8 million tons of coarse grains for 1982/83 delivery. Total Mexican imports during July-June 1982/83 are currently expected to reach 5.5 million tons and 7.7 million on an October-September year. Imports could go higher if financing can be found for additional quantities. The imports are expected to include feed grains, as well as corn for direct human consumption. If total imports are constrained by lack of financing, Mexico will fall short of feed needs and livestock and poultry output could decline after the strong growth of recent years. A return to more favorable weather in 1983 could alleviate some import pressure, but stocks rebuilding will be necessary and Mexican consumers and livestock producers will continue to press for secure grain supplies.

After 3 years as a sizeable corn importer, Brazil has returned to a net coarse grain exporting position. Back-to-back record crops and only modest growth in feed use has permitted Brazil to re-enter the export market, exporting about 0.5 to 1.0 million tons of corn in 1982/83. Though Brazil has traditionally faced a good deal of volatility in its coarse grain output, the Brazilian government is actively encouraging expansion of corn production. Backing up its commitment to expanding corn exports, Brazil has signed a supply agreement with the USSR.

Eastern Europe has been a region of major change in the world coarse grain outlook over the past 2 years. Once thought to be a region of relatively steady long-term growth in feed grain import demand and consumption, the recent financial crisis has gravely affected East European ability to finance imports and to continue the expansion of livestock and poultry production characteristic of the 1970's. Coarse grain imports during 1982/83 are expected to be less than half the level of only 2 years ago when annual imports averaged around 11 million tons. From 1978/79 to 1980/81, East European imports accounted for over 10 percent of annual global coarse grain trade. In 1982/83, the region will account for only about 5 percent.

Although a record 1983 harvest is partially responsible for the sharp cutback, severe hard currency problems and curtailment of both foreign government and bank credits for agricultural imports into the region are the keys to the smaller import figures. Unlike temporary production fluctuations, the financial problems are apparently causing a reassessment of the livestock growth plans throughout the region and have already caused some major readjustments in Poland, Czechoslovakia, and Romania.

Soviet grain output in 1982 apparently surpassed the disastrous 1981 crop, but was the fourth consecutive poor harvest in that country. The somewhat larger total crop of 180 million tons, combined with continued large animal inventories, mean that coarse grain imports will continue to be large during 1982/83. However, very slow purchases and shipments of coarse grains worldwide during the initial 5 months of July-June 1982/83 indicate imports for that period could fall substantially below the record 25.6 million tons imported during 1981/82. Nevertheless, at 19 million tons imports would be the second largest ever.

West European imports are expected to decline to around 21 million tons in 1982/83 compared with nearly 23 million in 1981/82. A large coarse grain crop in the EC-10, combined with increased use of domestic barley and wheat for feed, has contributed to reduced coarse grain import demand by the group. Depressed internal grain prices could stimulate some additional use of grain in livestock and poultry rations. EC-10 coarse grain exports during 1982/83 are also expected to increase. In other West European countries, larger crops are likely to reduce import demand below the record 1981/82 level, but imports of 11.5 million tons would be the second highest level ever. Imports by Spain and Portugal, the group's largest importers, are expected to decline only marginally.

Coarse grain imports by OPEC countries have increased about 100 percent since the last large increases in oil prices occurred in 1978/79 to over 7 million tons in 1982/83. The most dramatic growth in coarse grain imports by OPEC countries has been in Saudi Arabia which is expected to import 2.8 million tons in this July-June marketing year. The 500 percent growth in coarse grain imports since 1978/79 has been the direct result of Saudi attempts to increase their livestock production. These policies have led to the subsidized importing of increasingly large amounts of barley and sorghum. The growth of coarse grain imports by other OPEC countries has not been as dramatic in the Saudi case, but these countries represent potential for substantial growth in the future.

South Korea and Taiwan have continued to exhibit growth over the past few years in grain utilization and imports for their livestock sectors. These countries have been able to weather the current worldwide recession better than many weaker economies and have been able to take advantage of the prevailing low level of grain prices. Korea's coarse grain imports are expected to exceed 2.8 million tons in 1982/83, having grown at about 5 percent per year for the past 3 years. Most of these imports will be of corn, with an increasing proportion of sorghum because of internal pricing policies. Taiwan's growth in coarse grain imports has been steady during the past 3 years. Imports in 1982/83 are expected to reach 3.8 million tons.

Japan's coarse grain imports during 1982/83, forecast at 18.5 million tons, should continue roughly on par with import levels of the past 3 years. Increased use of rice in mixed feed (about 500,000 tons) will likely displace some potential sorghum imports. The weakening value of the yen in relation to the dollar will likely keep much of the decrease in U.S. coarse grain export prices from being passed on to Japanese farmers, thus blocking potential demand growth.

A large coarse grain crop in China is expected to be supplemented by coarse grain imports of at least 2 million tons in 1982/83. Population growth, increased industrial use of corn, and the beginning of a feed/livestock industry are pushing Chinese demand for coarse grain higher this year. This growth can be expected to continue and probably amplify in future years as well.

Export availabilities in the major foreign exporting countries are forecast to decline only slightly compared with the record 1981/82 quantity. Canada harvested a near record coarse grain crop in 1982, but exports could decline slightly from last year's record volume because of a weakened world barley market. A drought-reduced crop in Thailand will cut into 1982/83 exports, though shipments are likely to remain at their second highest level ever. Australian coarse grain exports will suffer both from a smaller crop and increased domestic use because of the severe drought. Australia may even choose to import some feed grains or feed wheat to offset shortages in critical areas. Though early conditions pointed to a possible repeat of the poor 1981 South African crop, recent rains have permitted planting to continue and have considerably brightened crop prospects. With stocks drawn down, a relatively good crop is necessary to move exports back up to the 1981/82 level. Argentine coarse grain production is likely to be somewhat reduced this year because of emphasis on wheat production. Since the crop is just being planted, much attention will be focused on this crop and on Soviet purchasing patterns in Argentina over the upcoming months. Even with a smaller crop, Argentine coarse grain exports could total 12 million tons during July-June 1982/83, representing about 12 percent of global trade.

DISCUSSION

The major world coarse grain stocks buildup over the past 2 years was not a phenomenon that occurred overnight. The potential for such an occurrence has been increasing for at least several years. Though, admittedly, the situation of world scarcity of grains which some analysts foresaw only 2 years ago could have happened with very unfavorable weather, the underlying momentum was building toward surplus. During the 1970's, the rapid expansion of world demand for coarse grains, a surge in trade and strong prices led to the bringing in of an additional 15 to 20 million hectares of coarse grain area compared with harvested area during the 1960's. For the coarse grain exporting countries as a group area expanded 7 percent, while area among major foreign exporters (non-U.S.) increased 15 percent. Average global yields of coarse grains expanded 33 percent during the past 5 years compared with the final 5 years of the 1960's. The most significant yields increase occurred in exporting countries. Price expectations rose worldwide and the mechanism for farm income or commodity price stabilization in exporting and importing

countries provided farmers with an "umbrella" of added assurance against the effects of a collapse of prices. These actions enhanced the stability of output, but also created the problem of disposal of surplus grain or its costly storage. Although there were bound to be years of relative tightness in supplies, such as 1980, larger harvests from greater area became more predictable. Thus, back-to-back record corn yields in the United States over the past 2 years contributed only about 23 million tons of additional world stocks above what would have occurred with only trend yields (based on trend since 1960). At the same, world coarse grain stocks have increased more than 70 million tons.

This underlying trend toward larger area and greatly improved yields had some occasional impact in prices during a period of rapid expansion in consumption, but the serious repercussions were only really felt when that demand ceased to grow and production continued to expand. When the pie expanded more slowly--as was the case over the past 4 years--these same policies brought the exporting countries head-to-head with record supplies for a stagnating market. This is the situation which coarse grains face in 1982/83 and which policymakers and farmers must consider in the outlook for 1983/84. One of the key questions to be answered in each exporting country is whether the current situation of oversupply and depressed prices is best dealt with by limiting production, expanding world consumption or some combination of both.

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The 1982/83 feed grain outlook can be summarized as a record supply confronted with sluggish demand resulting in across-the-board weakness in feed grain prices and a further build-up of feed grain stocks. Compared with 1981/82, feed grain supplies are up over 42 million metric tons while expected use is up only 10 million. Low prices, rather than underlying demand strength, are responsible for the forecast rise in use. The anticipated ending stocks to use ratio is 48 percent, compared with 35 percent for 1981/82 and 16 percent for 1980/81.

Greater incentives to participate in the feed grain program; a higher percentage reduction of acreage planted by participants, and yields closer to trend or average are expected to result in feed grain production in 1983 below the level of use. This would imply some recovery in prices and reduction in stocks during 1983/84.

A review of the long run trends in feed grain production and utilization is useful in setting the background for the 1982/83 outlook.

For the 14 years, 1967-1981, feed grain production trended upward at an annual average rate of 5.9 million metric tons. Since the aggregate harvest of sorghum, barley, and oats held close to 40 million metric tons per year throughout the 14 years, the upward trend in feed grain production is really an upward trend in corn production. Corn is the dominant feed grain and comprises about 84 percent of total feed grain production this year compared with 76 percent in 1967. Consequently, the outlook for corn largely determines the outlook for the other feed grains.

The total utilization of feed grains also trended upward from 1967 to 1981 but at a somewhat slower rate than production--4.9 million tons per year compared with 5.9 million tons annually for production. The upward trend for industrial use was 700,000 tons per year, although this category of use is still a small part of the total market for feed grains. Since total domestic disappearance of feed grains did not exhibit a trend in fluctuating about an annual average of 144 million tons, the trend in total disappearance is accounted for by the rise in exports from 1967 to 1981.

Corn Supply for 1982/83

The supply of corn for the 1982/83 marketing year is estimated at a record 10.7 billion bushels. This includes a carryover stock of 2.34 billion bushels and a harvest of 8.33 billion bushels--both records.

This years' carryover stock of corn will not be as bearish a factor on market price as it might appear. Almost 2.0 billion bushels of the carryover are isolated from the market at current prices (reserve 1,310 million bushels, CCC inventory 300 million, and outstanding and extended loans of 361 million), leaving only about 395 million bushels of the carryover as free stocks. The free portion of the carryover turns out to be the lowest since 1978 when the free carryover stock totaled 377 million bushels.

Utilization Projected Marginally Higher for 1982/83

Disappearance of corn is forecast to be almost 7.3 billion bushels in 1982/83, about 6 percent above the 6.9 billion bushels used last year and only slightly larger than use in 1980/81. Further increases in the use of corn sweeteners and ethanol as a gasoline additive are expected to push food, seed, and industrial use up to about 900 million bushels this year.

Exports of corn for 1982/83 are forecast at 2.15 billion bushels, compared with 1.97 billion bushels exported in 1981/82. A decline in coarse grain production among the major foreign exporting countries may increase our share of world coarse grain trade somewhat. An increase in world livestock and poultry numbers, some improvement in economic conditions, and the "blended export credit" program are expected to contribute to an expansion in U.S. feed grain exports this year. The largest increase in exports will be to Mexico, Mainland China, Japan, Korea, and Egypt.

Increased cattle feeding, and poultry and dairy production, along with generally more intensive feeding of all livestock, are expected to push feed and residual use up about 120 million bushels to 4.2 billion.

The September 1 market hog inventory in the 10 quarterly reporting States was down 12 percent from a year earlier, and the breeding inventory was down 13 percent. Both of these measures indicate reduced hog feeding for the first half of the marketing year.

Throughout most of this year the hog/corn ratio has been in a range that normally would be expected to stimulate an increase in farrowings. However, barrow and gilt slaughter since September 1 gives no indication that an expansion of the breeding herd is underway. Therefore, feed use in hog production likely will be under last year for the second half of the marketing year as well.

The number of fed cattle marketed during the first half of 1981/82, in the 13 quarterly reporting States, was 3 percent under marketings for the first half 1980/81. However, improved profits in feeding stimulated an increase in cattle feeding during the second half of 1981/82. The number of fed cattle marketed during April-September exceeded year-earlier marketings by 4 percent and the number of cattle on feed October 1 was up 7 percent from last October.

During January-May of this year, the number of broiler chicks placed in the 21 principal broiler producing States was below a year earlier. Starting in June, chick placements have exceeded year-earlier placements. Lower feed costs and reduced pork production are expected to keep broiler production up by 1 to 3 percent in 1983.

The hatch of turkey poults from October 1981 through June 1982 averaged almost 7 percent below a year earlier. During July and August, the hatch of poults exceed the year-earlier hatch by 9 percent and more eggs were in incubators on October 1. Burdensome stocks of frozen turkeys on hand in early 1982 have been reduced to normal levels resulting in improved prices since mid year. Turkey production for 1983 is expected to be up 2 to 4 percent.

A record high number of dairy replacement heifers was on hand this past July and is expected to result in some additional expansion of the milking herd this fall. Lower feed grain prices are expected to maintain a milk-feed price relationship favorable to heavy concentrate feeding. Thus, the year-over-year increase in output per cow is expected to continue. These factors underly the gains expected in feed consumption by the dairy industry--at least through mid 1983. Feed use in dairy production the last half of 1983 will depend on how the industry reacts to deductions of 50-cents-per-cwt. of milk produced that go into effect December 1 this year and April 1, 1983.

Corn Price to Rise Seansonally But Average Below Year Earlier

Above, it was indicated that about 2.0 billion bushels of the carryover stock is isolated from the market. Subtracting this from the total supply of 10.7 billion bushels leaves 8.73 billion bushels potentially available to meet maket needs of 7.25 billion bushels. This implies a surplus in the market of 1.48 billion bushels which would be very price depressing. However, this does not take into account the 23 percent of the 1982 corn crop that is in compliance with the acreage production program, and therefore, eligible to go into the FOR or under a regular CCC loan.

Twenty three percent of this year's harvest would be about 1.9 billion bushels. Suppose we assume that 40 percent--about 760 million bushels--goes under loan (reserve or regular). Reducing the available supply by 760 million bushels would leave 7.97 billion bushels available to meet market needs of 7.25 billion, leaving potential ending free stocks of about 720 million bushels. Market prices likely would not be under much upward pressure under these conditions.

As an alternative, assume that 70 percent--about 1.33 billion bushels--of the eligible corn went under loan. This would leave an available market supply of 7.4 billion bushels and would imply year ending free stocks of about 150 million bushels. However, free stocks from 1982 production would not reach this level until the end of September. In the meantime, new crop barley and sorghum would become available in late July, and in August and September new crop corn would start coming on the market.

Consequently, even this situation likely would not generate a lot of upward pressure on price next summer. Part of the eligible corn will be under regular CCC loans. The redemption price for this corn would be about \$2.75 next summer (\$2.55 loan plus accrued interest of \$.20). This redemption price would seem to be about as high as price would go under this scenario. Consequently, it appears that in order to get prices above \$2.80 next summer, almost all of the eligible corn would have to move into the farmer owned reserve. This would likely trigger a release of the 1981 reserve corn. However, the probability of this happening is not high.

The first scenario of somewhere around 40 percent of eligible grain going under loan seems the more likely outcome. This would result in farm level corn price of \$2.15-\$2.35 for 1982/83 compared with the average farm price of \$2.45 this past year. Also, the carryover stock would be increased to approximately 3.4 billion bushels--a billion larger than the carryin stock this year.

If feed use, exports, the proportion of eligible grain going under loan, or some combination of these exceeds the forecasts, the farm price would tend toward the upper end of the forecast range. And if the deviation from forecast occurred in feed use and/or exports, the increase in stocks would be less than forecast. Similarly, if use or the proportion of eligible grain going under loan is less than forecast, the farm price likely would be closer to the lower end of the forecast range.

The market for both sorghum and barley face potentially tighter supply conditions than for corn. The available supply this year totals 843 million bushels for sorghum and 649 million bushels for barley, with total use forecast at 716 million bushels and 482 million bushels, respectively. If all of this year's production remained freely available to the market, ending free stocks would amount to 127 million bushels of sorghum and 167 million bushels of barley. About 36 percent of both crops is in compliance with the acreage reduction program. If as much as 40 percent of the eligible sorghum and barley were to go under loan, free stocks would become very tight. However, the amount of price strength that would develop would be limited by the price of corn.

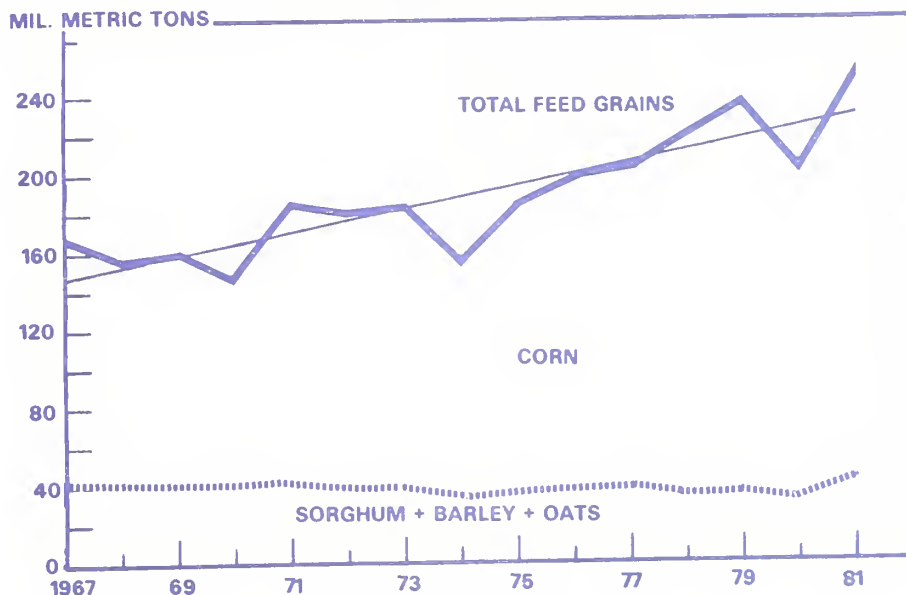
The feeding value of sorghum is about 95 percent of corn and for barley it is about 90 percent. Thus, if the delivered price of corn is less than the feeding value of sorghum or barley, feeders would tend to substitute corn which would in turn reduce the upward pressure on sorghum and barley prices. Even so, prices for sorghum and barley are likely to average higher relative to corn this year compared with last year. The farm price for sorghum is expected to average \$2.15-\$2.30 this year and the price of barley likely will fall in the \$2.10-\$2.25 range.

Last year the supply of oats was on the short side and oat prices held well above its feeding value relative to corn. However, this year's harvest of 599 million bushels is almost 20 percent larger than the 1981 crop and only a small part of the crop is in compliance with the acreage reduction program. Consequently, the market supply will not only be adequate for

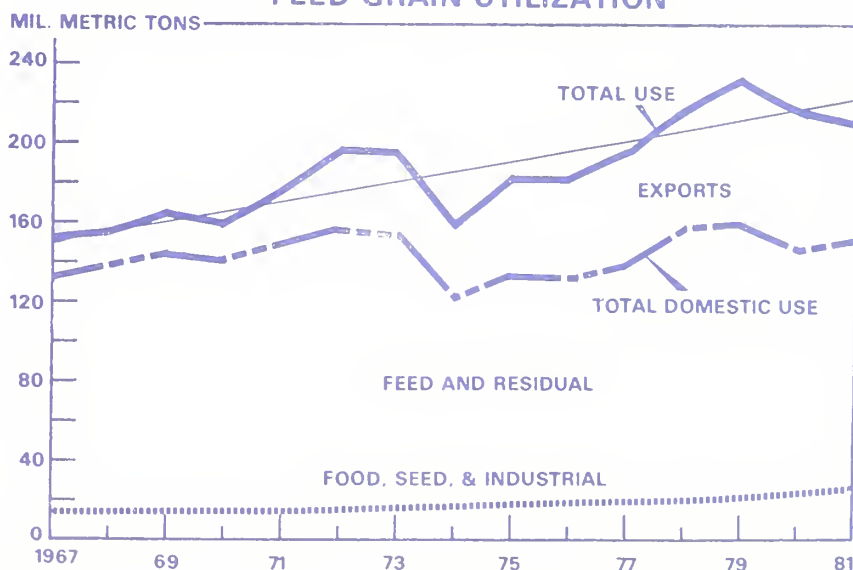
market use this year but likely will increase ending stocks by about 75 million bushels. Therefore, the price of oats will be held closer to its feeding value relative to corn. The farm price of oats is expected to average \$1.40-\$1.55 per bushel compared with last year's average of \$1.90.

Although some aspects of the 1983 feed grain program are still under study, such as the "payment in kind" plan, participation will require a greater reduction in plantings than was required this year. Moreover, the experience of many feed grain producers this year, coupled with higher target prices for 1983, is expected to encourage a greater rate of participation next year. If participation reached 50 percent, and yields are near trend or average, feed grain production in 1983 would be less than market needs resulting in stronger prices and some draw down in stocks during 1983/84.

FEED GRAIN PRODUCTION



FEED GRAIN UTILIZATION



U.S. FEED GRAINS AND CORN 1/

Commodity	: 1980/81	: 1981/82	: 1982/83 Projections			
	:	: Estimated	:	:	:	: Probable
	:	:	: Oct.	: Nov.	:	: variation 2/

FEED GRAINS:						
Area	:	Million acres				
Planted	:	121.3	123.5	121.5	121.5	
Harvested	:	101.5	106.9	106.2	106.2	
Yield per harv.	:	Metric tons				
acre	:	1.95	2.32	2.37	2.38	
	:	Million metric tons				
Beginning stocks	:	52.4	34.6	73.0	73.0	
Production	:	198.0	248.4	252.0	252.5	+5/ -5
Imports	:	.3	.3	.3	.3	
Supply, total	:	250.7	283.3	325.2	325.8	+5/ -5
Feed and residual	:	123.0	125.9	129.0	129.0	+10/-10
Food, seed, & ind.	:	23.8	25.8	28.1	28.1	+1/ -1
Domestic, total	:	146.8	151.7	157.1	157.1	+10/-10
Exports	:	69.3	58.6	65.9	63.4	+6/ -6
Use, total	:	216.1	210.3	223.0	220.5	+14/-14
Ending stocks, total	:	34.6	73.0	102.2	105.3	+11/-11
Farmer-owned res.	:	4.9	39.7	62.7	64.3	
CCC inventory	:	7.1	8.8	13.0	13.3	
Free stocks	:	22.6	24.5	26.4	27.7	
CORN:						
Area	:	Million acres				
Planted	:	84.0	84.2	81.9	81.9	
Harvested	:	73.0	74.6	72.8	72.8	
Yield per harv.	:	Bushels				
acre	:	91.0	109.9	114.2	114.4	
	:	Million bushels				
Beginning stocks	:	1,617	1,034	2,366	2,366	
Production	:	6,645	8,201	8,315	8,330	+215/-215
Imports	:	1	1	1	1	
Supply, total	:	8,263	9,236	10,682	10,697	+215/-215
Feed and residual	:	4,139	4,092	4,200	4,200	+350/-350
Food, seed, & ind.	:	735	811	900	900	+25/-25
Domestic, total	:	4,874	4,903	5,100	5,100	+365/-365
Exports	:	2,355	1,967	2,250	2,150	+200/-200
Use, total	:	7,229	6,870	7,350	7,250	+500/-500
Ending stocks, total	:	1,034	2,366	3,332	3,447	+400/-400
Farmer-owned res.	:	185 3/	1,310	2,100	2,150	
CCC inventory	:	238	300	450	475	
Free stocks	:	611	756	782	822	
Avg. farm price 4/	:	3.11	2.45	2.20-2.40	2.15-2.35	

1/ Marketing year beginning October 1 for corn and sorghum; June 1 for barley and oats. 2/ The "probable variation" reflects the root mean square error and/or standard error of estimate from trend and judgement. Chances are about 2 out of 3 that the outcome will fall within the implied ranges. 3/ Reserve loans that were called in January 1981, and extended indefinitely in April. 4/ Season average farm price, dollars per bushel.

U.S. SORGHUM, BARLEY AND OATS 1/

Commodity	:	1980/81	:	1981/82	:	1982/83 Projections
	:		:	Estimated	:	: Probable
	:		:		:	Oct. 22 : Nov. : variation 2/

SORGHUM:	:			Bushels		
Yield/harv. acre	:	46.3		64.1	59.5	59.8
	:			Million bushels		
Beginning stocks	:	147		109	292	292
Production	:	579		880	821	826 +35/-35
Imports	:					
Supply, total	:	726		989	1,113	1,118 +35/-35
Feed and residual	:	307		437	430	430 +45/-45
Food, seed, & ind.	:	11		11	11	11
Domestic, total	:	318		448	441	441 +45/-45
Exports	:	299		249	275	275 +35/-35
Use, total	:	617		697	716	716 +65/-65
Ending stocks	:	109		292	397	402 +45/-45
Avg. farm price 3/	:	2.94		2.25	2.15-2.30	2.15-2.30
BARLEY:	:			Bushels		
Yield/harv. acre	:	49.6		52.3	56.2	56.2
	:			Million bushels		
Beginning stocks	:	192		137	149	150
Production	:	361		478	516	516
Imports	:	10		10	10	10
Supply, total	:	563		625	675	676
Feed and residual	:	174		200	230	230 +25/-25,
Food, seed, & ind.	:	175		175	177	177 +5/-5
Domestic, total	:	349		375	407	407 +25/-25
Exports	:	77		100	75	75 +15/-15
Use, total	:	426		475	482	482 +35/-35
Ending stocks	:	137		150	193	194 +30/-30
Avg. farm price 3/	:	2.85		2.50	2.10-2.25	2.10-2.25
OATS:	:			Bushels		
Yield/harv. acre	:	53.0		54.0	57.7	57.7
	:			Million bushels		
Beginning stocks	:	236		177	152	152
Production	:	458		508	599	599
Imports	:	1		1	1	1
Supply, total	:	696		686	752	752
Feed and residual	:	432		452	440	440 +30/-30
Food, seed, & ind.	:	74		75	75	75
Domestic, total	:	506		527	515	515 +30/-30
Exports	:	13		7	10	10 +3/-3
Use, total	:	519		534	525	525 +30/-30
Ending stocks	:	177		152	227	227 +25/-25
Avg. farm price 3/	:	1.79		1.90	1.40-1.55	1.40-1.55

1/ Marketing year beginning October 1 for sorghum, June 1 for barley and oats.
2/ The "probable variation" reflects the root mean square error and/or standard error of estimate from trend and judgment. Chances are about 2 out of 3 that the outcome will fall within the implied ranges. 3/ Season average farm price, dollars per bushel.

DISCUSSION OF FEED GRAIN OUTLOOK

Robert N. Wisner, Iowa State University

It is clear that feed grains will be in surplus supply in the year ahead, with much of the world's surplus being stored here in the U.S. As usual at this time of the year, domestic and foreign demand prospects are not completely certain, and ending carryover stocks for 1982-83 could vary a few million tons either side of official projections. But the key price-influencing factors this season appear likely to be (1) the extent to which eligible farmers will utilize loan and reserve programs, (2) the volume of reserve corn from 1982 and prior crops that is rotated next summer for quality reasons, (3) final details of the 1983 Reduced Acreage Program, and (4) farmer compliance with the 1983 program.

First, some brief observations about demand. The grain trade was shocked by the apparent large cut in domestic corn feeding last summer, as indicated from the October stocks report. Some analysts attribute the decline to an under-estimation of the 1981 crop. However, for that explanation to be valid, one would have expected feed and residual disappearance to be down in the October-December quarter, rather than in June-September. An alternative explanation is that errors may have occurred in the January 1 and March 1 stocks, since these reports imply first-half corn feed usage was up substantially despite low grain-fed livestock numbers. The 1.4% decline in 1981-82 marketing year total corn feeding seems consistent with relatively low cattle-on-feed numbers the first half of the marketing year, a sharp cut in hog numbers in the second half, modest livestock marketing weights, good to excellent summer pastures and increased feeding of other grains during the summer. For that reason, the 1981-82 marketing year total

U.S. corn feeding figure looks reasonable as a base for projecting this season's feed and residual usage.

Looking ahead, the recent sharp increase in cattle on feed suggests official corn and grain sorghum feeding projections could be slightly conservative. However, feed usage 100 to 140 million bushels above current projections would not greatly alter the surplus supply situation. Feed usage also will be influenced by the timing and extent of any expansion in hog farrowings. Most indicators point to a significant upturn in farrowings in the last half of the corn marketing year which should hold spring and summer feeding near the 1981 level.

In the world picture, it is difficult to disagree with official projections showing a 9% increase in 1982-83 U.S. corn exports. Perhaps the most striking development on the world scene is the sharp rise in U.S. feed grain carryover stocks at the same time foreign stocks are declining (see Table 1). U.S. feed grain stocks are projected to set a new record at the end of this marketing year and will represent about three-fourths of the world total. Foreign stocks, on the other hand, are declining and are projected at the lowest level in the last ten years. Reasons for the diverse trends in stocks include strength of the U.S. dollar, the U.S. reserve program, large U.S. production, sluggish world demand and several other factors. With the rapid accumulation of U.S. stocks, there will be strong pressure to alter our price support system in order to halt or reverse the stocks build-up.

ASCS Loan and Reserve Participation

Price trends from May or June onward will be influenced heavily by price support programs. Total eligibility of corn for loan and reserve programs appears to be somewhere between 1.7 and 2.0 billion bushels -- after taking

Table 1. U. S. AND FOREIGN FEED GRAIN STOCKS

	(MIL. M. TONS)		U.S. As
	<u>U.S.</u>	<u>FOREIGN</u>	<u>% OF WORLD</u>
PROJ. 1982-83	105.4	38.0	73.5
1981-82	73.1	41.3	63.9
1980-81	34.7	45.4	43.3
1979-80	52.7	38.4	57.8
1978-79	46.4	43.8	51.4
1977-78	41.5	42.8	49.3
1976-77	30.0	45.6	39.7
1975-76	17.3	39.4	30.5
1974-75	15.5	41.8	27.1
1973-74	21.8	41.7	34.3
1972-73	31.7	36.5	46.5
1971-72	46.6	39.2	54.3
1970-71	32.3	39.9	44.7
1969-70	46.1	43.1	51.7

Source: FAS, USDA

into account that participation in the 1982 farm program was heavier in lower yielding areas of the cornbelt than elsewhere. In other words, the percentage of production eligible for loan programs likely is smaller than the percentage of the acres harvested. If 70% of the eligible corn is placed in reserve and loan programs, corn prices in part of the eastern cornbelt might at least briefly move to minimum loan redemption prices. Accumulated interest costs would push the minimum redemption price about 23 cents above the loan rate at loan maturity.

Will loan and reserve movement be this heavy? Last year when all of the crop was eligible for both programs and prices were low, about 2.0 billion bushels or 24% of production had moved under loan or reserve by late summer. Recent price strength has brought midwest cash prices up near year earlier levels, making these programs a bit less attractive than in early fall. But the 1982 9-month loan is ¹⁵~~10~~ cents higher than last year's loan rate and the reserve loan is up 35 cents. Thus, the incentive for loan and reserve placements remains above a year ago. Farmer use of the reserve program also will be influenced by availability of storage space, tightened rules on rotating reserve stocks, and the expected length of time the program will be continued. From our discussions with farmers at extension meetings, I sense that many are uneasy about putting up more storage for reserve grain when they already in some cases have storage for up to two year's crops. Talk of capping the reserve or reducing it leaves them concerned that their storage facilities might not be needed in the future. These constraints will likely hold reserve and loan participation significantly below the maximum eligible bushels, but perhaps near the 50 to 70 percent level.

To determine the impact on "free" corn supplies, we also need to look at the potential volume of reserve stocks rotated for quality reasons.

Reserve stocks appear headed toward the 2.0 billion bushel level in 1983. If 10% of these stocks were rotated for quality reasons, and assuming an October 1, 1983 carryover at 3.3 billion bushels, "free" stocks would seem adequate for normal trade needs. With substantial use of flat storage for reserve corn and lower-than-normal quality of the crop in the western corn-belt, this level of rotation seems possible. Accordingly, heavy redemptions of 1982-crop corn from 9-month loans may not be needed next summer if current utilization projections materialize.

Acreage Reduction Programs

Participation in next year's farm program and 1983 production prospects will begin to influence prices by spring. While the exact format of the Acreage Reduction Program is uncertain, it seems likely that final compliance will be well above last year. That should at least modestly reduce 1983 production and should substantially increase eligibility for price support loans on next year's crop. These prospects are likely to bring modest upward pressure on April-June corn and grain sorghum prices. But the extent of price strength will depend on whether the payment-in-kind program materializes or whether the forgiveness of reserve loans is used to return reserve grain to farmers.

Seasonal Price Pattern

Tight farmer holding of grains has been a major factor behind the recent strength of feed grain prices. Farmers may continue their holding pattern into mid-winter. But with major cash expenditures for taxes, land and machinery payments, maturing commercial loans and other items due in March, cash corn and grain sorghum prices appear likely to weaken in late February and early March. Marketing of corn may also be accelerated at

that time by a significant amount of higher moisture corn in the western cornbelt that will need to be moved before warm weather.

From April through late May or early June, corn prices appear likely to trend higher. The farm program, seasonally light farmer marketings and gradually improving demand should exert upward pressure on prices. With average weather and an Acreage Reduction Program as currently announced, the U.S. average farm price of corn during this period seems likely to at least briefly exceed the 9-month loan rate. Summer prices will be influenced by weather and decisions on loan forgiveness and payment-in-kind programs.

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Economic Research Service

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The fruit industry expects larger supplies of all fresh fruit this year. Production of both citrus and noncitrus fruit is expected to be substantially larger than last season. Significant increases in production of apples, grapes and oranges are likely to weaken grower prices substantially. Contract prices for canning noncitrus fruit were negotiated at lower levels than a year ago because of the slow movement of most canned items. Overall, despite the lower prices, larger output will result in relatively good grower returns and the fruit industry will have another profitable year. With the moderate rate of increase in costs of inputs, profits may be near the levels of 1981/82.

The significantly larger supply, the weak economy, and moderate increases in costs of marketing are likely to diminish the rate of rising retail prices of fruits. For some fruit items, retail prices could be lower than a year ago. Costs of food marketing have increased only moderately this year. According to the U.S. Department of Agriculture, labor costs for food retailing have risen only 4 percent from a year earlier. Transportation rates, a major component of fresh fruit marketing costs, have advanced 5.5 percent from a year earlier. Including all other items, the index of food marketing costs rose 3 percent this year to 334.8 (1967=100) in September, compared with 325.4 a year earlier. Supplies of most fruit should be plentiful in supermarkets and consumers should enjoy reasonable prices.

GENERAL PRICE OUTLOOK

After six consecutive monthly increases, the index of prices received by growers for fresh and processing fruit declined to 196 (1977=100) in October, from a record high of 296 in September, but still 51 percent above a year ago. Sharply lower prices for California Valencia oranges accounted for most of the decrease. With larger supplies of apples and citrus, particularly oranges, the index is expected to continue to decline this winter from current high levels. Prices are likely to fall below a year ago unless there is a freeze in the citrus areas this winter.

Higher prices of apples and oranges have kept the index of retail prices of fresh fruit substantially above a year earlier. The September retail price index for fresh fruit reported by the Bureau of Labor Statistics (BLS) was 329 (1967=100), 7.4 percent above a year ago. Since supplies of fresh fruit will increase seasonally this winter, retail prices will likely decline. If the costs of marketing continue to rise only moderately, retail prices this winter could be slightly below a year ago.

Adequate supplies have moderated increases in retail prices of processed fruit. In September, the BLS index of retail prices for processed fruit was 149 (1977=100), only slightly advanced from August. The September index was 3.7 percent above a year earlier. With current economic conditions sluggish and supplies adequate, prices are likely to increase only slightly from current levels.

Table 1.--Index of quarterly prices received by growers for fresh and processing fruit, 1979-83

Year	1st	2nd	3rd	4th	Annual average
(1977=100)					
1979	134	145	155	142	144
1980	125	131	116	123	124
1981	122	126	125	142	129
1982	144	156	225	<u>1/160</u>	<u>1/171</u>
1983 <u>1/</u>	130	140	165	150	146

1/ Estimated.

Table 2.--Quarterly Consumer Price Index for fresh fruit, 1979-83

Year	1st	2nd	3rd	4th	Annual average
(1967=100)					
1979	218	251	279	246	249
1980	238	265	290	261	264
1981	256	276	302	279	278
1982	289	322	333	<u>1/295</u>	<u>1/310</u>
1983 <u>1/</u>	285	305	330	300	305

1/ Estimated.

Table 3.--Quarterly Consumer Price Index for processed fruit, 1979-83

Year	1st	2nd	3rd	4th	Annual average
(Dec. 1967=100)					
1979	115	117	120	121	118
1980	123	126	127	129	126
1981	134	142	144	145	141
1982	148	148	149	1/150	1/149
1983 1/	152	153	154	156	154

1/ Estimated.

Fresh Citrus Fruit

November 1 prospects for 1982/83, excluding California "other areas" grapefruit, indicate a citrus crop of 13.7 million tons, 13 percent more than last season, but still 9 percent below 1980/81. A sharply larger orange crop is chiefly responsible. Larger crops are also estimated for lemons, limes, tangerines, and Temples, but smaller crops are indicated for grapefruit and tangelos.

Table 4.--U.S. citrus fruit production: 1980/81, 1981/82 and indicated 1982/83

Crop	1980/81	1981/82	1982/83
1,000 short tons			
Oranges	10,487	7,640	9,186
Grapefruit 1/	2,759	2,893	2,618
Lemons	1,189	942	1,178
Limes	48	52	68
Tangelos	221	230	189
Tangerines	239	212	253
Temples	162	144	207
Total 1/	15,105	12,113	13,699

1/ Excludes California grapefruit in "other areas."

Source: Crop Production, SRS.

Oranges

November 1 prospects point to an orange crop of 216 million boxes, 21 percent more than last season, but 12 percent below 1980/81. Larger crops are indicated for all producing areas. The forecast for production of all oranges in Florida is 143 million boxes, 14 percent above last season's freeze-damaged crop but 17 percent less than 1980/81. Production of early and midseason varieties in Florida, 72 million boxes, is 3 percent less than last season. Valencia production in Florida is expected to total 71 million boxes, 37 percent more than last season's crop. At 63 million boxes, the California crop is 47 percent more than last season but 3 percent below the 1980/81 season. All orange production in Texas is forecast at 6.2 million boxes, up 4 percent from last season. Arizona producers expect to harvest 3.3 million boxes, 8 percent more than last season.

Fresh orange prices at both farm and retail levels so far have been well above a year ago. However, prices of fresh oranges have declined and are expected to fall further when sharply larger supplies of California navel oranges and increased supplies of apples become available. Current prospects through the winter point to average grower prices moderately lower than last year. These prices will be reflected at the retail level in the months ahead.

The weak economy and higher U.S. orange prices have caused U.S. exports of fresh oranges to decline. Shipments to all major importing countries fell drastically from last year. On the other hand, Japan has become our third largest market, as U.S. orange exports to Japan continued to increase with the enlargement of the import quota for U.S. oranges. If the U.S. dollar remains strong and the economy does not turn around abroad, prospects for U.S. exports of fresh oranges will not be favorable during the coming months.

Grapefruit

November 1 prospects for 1982/83 grapefruit production (including, for California, only desert valley fruit) point to a crop of 64 million boxes, 6 percent less than last season and virtually the same as in 1980/81. Smaller crops in Florida and Texas more than offset larger crops from Arizona and California.

Florida's grapefruit forecast of 44 million boxes is 9 percent less than last season's crop. Texas growers expect to harvest 13.5 million boxes, off 3 percent from last season's large crop. The crop in the California desert area is forecast at 3.9 million boxes, 14 percent above the 1981/82 crop. Arizona growers expect to harvest 2.6 million boxes, 8 percent more than last season.

Because the Florida grapefruit crop is maturing earlier than normal this year, shipments from Florida through early November were well above last year's levels. Consequently, f.o.b. prices have averaged substantially below last year. Carryover stocks of most processed grapefruit products are up going into the 1982/83 season, so processor demand is not expected to be strong this season. Thus, even with a moderately smaller crop, the larger orange crop and relatively weak processor demand may keep grapefruit prices below last season. However, if export markets improve somewhat when the world economy turns around in 1983, good demand might strengthen prices somewhat.

Lemons

The Arizona-California lemon crop (tree crop available for harvest) is forecast at 31 million boxes, 25 percent above 1981/82 but only slightly below the record high 1980/81 crop. California's crop at 23.3 million boxes, is up 26 percent from last season but 4 percent below 1980/81. In Arizona, a crop of 7.7 million boxes is expected, 22 percent more than the 1981/82 crop harvested last season.

Even with a larger crop, total shipments through early November were moderately behind last season's pace, primarily reflecting the sharp decrease in processing use. Deliveries to the domestic fresh market have been moderately larger, while export sales were down considerably from last year's level. Despite a larger crop, f.o.b. prices have averaged only slightly below a year earlier. Prices are expected to decline significantly this winter when supplies increase.

PROCESSED CITRUS FRUIT

The sharply reduced orange output during 1981/82 had a greater impact on utilization of citrus for processing than for fresh sales. Processing use totaled 8.4 million tons, off 25 percent from 1980/81. The share for processing use was also down, going from 75 percent in 1980/81 to 70 percent in 1981/82. In contrast, the fresh sales of citrus were down only 4 percent.

As a result of the Florida freeze, the quantity of oranges--including tangelos, Temples, tangerines, and K-early citrus--used for frozen concentrated orange juice (FCOJ) in 1981/82 was sharply reduced. So, even with a lower degree brix equivalent--42.0 vs. 43.4--and higher juice yield, the Florida packers only processed 133.4 million gallons of FCOJ, down 23 percent from the previous season. The Florida FCOJ yield is estimated at 1.28 gallons per box at 42.0 degree brix equivalent, compared with the 1980/81 yield of 1.21 gallons per box at 43.4 degree brix equivalent. Even with the sharply larger carryin and heavy imports, the total supply of FCOJ is still below the level of 1980/81.

Because of the freeze, canners' list prices for FCOJ of unadvertised brands have fluctuated from a low of \$3.95 per dozen 6-ounce cans to a high of \$4.45. The current price is \$3.95, compared with \$4.25 a year earlier. Even with a lower price, movement has been running behind last year's pace. Nevertheless, the stocks on hand as of October 30 were 62.7 million gallons, 21 percent below a year ago. If the movement stays at the current pace, the carryover could approach approximately 45-50 million gallons, compared with 69 million a year earlier.

With a larger crop and higher juice yield, the total pack of FCOJ in 1982/83 is expected to exceed last season's level. The forecast of the 1982/83 juice yield is 1.37 gallons a box at 42.0 degree brix equivalent. However, even with a larger pack likely, the total supply of FCOJ may not be larger than a year ago, unless imports continue heavy. If imports remain large, though, and movement does not turn strong, the relatively large supply may keep prices steady.

With the back-to-back freezes in 1981 and 1982, the total pack of chilled orange juice in Florida declined for the second consecutive year. It amounted to 181 million gallons (excluding single-strength reprocessed), down 15 percent from 1980/81. The decrease was caused by both the reduced tonnage of fresh oranges and smaller quantities of frozen orange concentrates. Following the higher prices of fresh oranges, prices of chilled orange juice have been strong throughout the season. Higher prices, combined with the sluggish economy, have weakened demand for chilled orange juice. Consequently, yearend stocks were slightly above a year earlier. With a larger crop and a higher juice yield, the total pack of chilled orange juice may rise during 1982/83. However, if the economy does not improve, demand for chilled orange juice may remain sluggish. As a result, prices may not increase.

Fresh Noncitrus

The 1982 noncitrus crop, including major tree fruits, grapes, and cranberries is forecast at 13.1 million tons, 9 percent above last year but still 7 percent below 1980. Although production of the principal summer fruits was smaller, it was more than offset by larger crops of apples and grapes. Available supplies of fresh noncitrus fruit this fall and winter will be adequate. Prices are expected to decline below a year earlier.

Table 5.--U.S. noncitrus fruit: Total production, 1980, 1981, and indicated 1982

Crop	1980	1981	1982
1,000 tons			
Apples	4,414	3,872	4,229
Apricots	129	89	102
Cherries, sweet	172	153	159
Cherries, tart	109	67	155
Cranberries	135	130	137
Grapes	5,595	4,458	5,680
Nectarines	191	182	150
Peaches	1,540	1,394	1,109
Pears	897	892	783
Prunes and plums	823	766	558
Total	14,005	12,003	13,062

Source: Crop Production, SRS.

Apples

The final forecast of the 1982 U.S. apple crop is 8.46 billion pounds, 9 percent more than last year. The Eastern States expect a crop of 3.12 billion pounds, 12 percent above last year. New York, the leading apple State in the region, expects 1.13 billion pounds, up 41 percent from 1981. In the Central States, prospects are for a crop of 1.46 billion pounds, 26 percent above last year. A larger Michigan crop is chiefly responsible; Michigan apple growers expect to harvest 950 million pounds, 44 percent more than last year. Prospects in the Western States are for a crop of 3.88 billion pounds, 2 percent above the 1981 harvest. The leading apple-producing State in the Nation, Washington, expects 3 billion pounds, 9 percent more than last year. By contrast, California growers expect to harvest 23 percent less than in 1981.

Shipments of fresh apples are running behind last year's pace because of the late harvest. Opening f.o.b. prices for fresh apples at major shipping points showed a mixed pattern, but they have declined to levels well below last year in most areas. Prices are expected to weaken further as supplies continue to increase this fall and winter. In addition, the larger navel orange crop from California will exert some downward pressure on apple prices. Export demand will also be important to apple prices this season, but the export outlook is not very encouraging because of the significantly larger crops from both Canada and the Western European countries. Processor demand for this year's apples is uncertain. Although carryover stocks of processed apple products are below a year earlier, movement of both canned apples and applesauce is well below a year ago. Slow movement may discourage packers from processing a large quantity of apples. Nevertheless, trade sources indicate that processors are likely to pack more canned apple products than last season. With smaller carryover stocks and relatively good movement, processor demand for juice apples is expected to be good. However, prices for processing apples have been negotiated below the high levels of last season.

Grapes

The final forecast for the U.S. grape crop is a record-high 5.68 million tons, 27 percent greater than last year. If the forecast is realized, the 1982 output will be 2 percent above the 1980 record. Prospects in California point to a crop of 5.2 million tons, 30 percent above last year, with sharply larger crops expected for all three types--table, wine, and raisin grapes.

Total grape production from States other than California is now forecast at 479,600 tons, up slightly from last year, primarily reflecting larger crops from New York, Arkansas, and Michigan. The New York grape forecast, 166,000 tons, is 11 percent above last year but 5 percent less than 1980. The Michigan grape forecast is 55,000 tons, 4 percent more than 1981, while prospects in Arkansas are for a crop of 8,500 tons, up 42 percent from last year. However, Washington, the third largest producing State, expects to harvest 157,000 tons, slightly below a year ago.

With a larger crop, shipments of fresh table grapes were running well above last year's pace. Consequently, grape prices have been substantially lower than a year earlier. By late October, Ribiers were quoted at \$8.50 a 23-pound lug in Central San Joaquin Valley, California, compared with \$9.50 a year earlier. F.o.b. prices for fresh table grapes are expected to remain lower throughout the season because the remaining supplies are well above year-earlier levels. However, the field price for natural seedless raisins was \$1,300 a ton, \$25 more than the 1981 offer. Lower sugar levels and a larger crop have lowered winery prices to grape growers substantially from a year ago. Prices vary greatly by producing areas, supplies, and variety grapes. Wholesale prices of wines have been above a year ago. The BLS September wholesale price index for all wines stood at 258.8 (1967=100), up 9 percent from a year ago. Demand for wine has been good, but the inventories of wines as of July 31 were higher. The large inventories and lower grape prices paid by wineries may moderate price increases somewhat.

Pears

The final forecast of the 1982 U.S. pear crop is 783,350 tons, 12 percent less than in 1981. With a smaller crop, shipments of fresh pears through late October were running moderately behind last year's pace. Deliveries of pears for processing were also well below last year's levels. F.o.b. prices for Bartlett pears have been generally higher than a year ago. Prices of winter pears are not expected to strengthen appreciably even with a smaller crop. Larger supplies of apples and oranges could exert some downward pressure on pear prices.

A moderately larger carryover and slow movement of canned pears have resulted in lower prices for Bartletts for processing use. California growers and canners have agreed on a field price of \$135 a ton for No. 1 grade Bartletts, compared with \$165 a year ago. The Washington-Oregon Canning Pear Association reported the cannery prices for No. 1 Bartletts, 2-1/2 inches and larger, at \$135 a ton, compared with \$150 in 1981. The lower price could be reflected in retail prices of canned pears.

Processed Noncitrus

With substantially smaller summer fruit production, this season's pack of most principal canned noncitrus fruit will be lower than last year. But, with ending stocks larger, supplies of most canned fruit will be adequate, and sluggish movement may hold prices relatively steady. Reflecting larger crops of strawberries and tart cherries, supplies of frozen fruit and berries will be up, and prices may weaken. Raisin output, even with a sharply larger crop of raisin-type grapes, will be reduced from last year because of late September and October rains in California. However, supplies will still be sufficient in view of the relatively large carryin stocks. Supplies of dried prunes will be sharply reduced reflecting an 18 percent smaller crop. Prices of dried fruit are likely to strengthen somewhat.

Although the packing season is not over, the 1982/83 pack of most canned fruit is expected to be smaller than last season. The unaudited pack data indicated decreased packs of canned Clingstone peaches, fruit cocktail and mixed fruits. The pack of canned Freestone peaches in California is down 14 percent from last year. The pack of canned Bartletts in California through October 1 is 38 percent smaller than a year ago. Canned cherries show a mixed performance in 1982. The tart cherry pack is 121 percent more than in 1981 but still 10 percent less than in 1980. The sweet cherry pack is sharply above both the 1980 and 1981 packs. The larger apple crop could result in a larger supply of canned apple products. Stocks of canned apples, applesauce, and juice are all down this season. On the other hand, demand is weak and so are prices, so the need to bolster overall supply is lacking. The size of the 1982/83 apple pack will ultimately be determined by demand for the product and by general economic conditions. However, trade sources indicate that processors are likely to pack more canned apple products than last season.

Reflecting the declining rate of inflation and weak demand, the October BLS wholesale price index for canned fruit stood at 246.3 (1967=100), virtually unchanged from a year earlier. Reduced supplies could result in higher prices but, again given the subdued economic climate and lackluster demand, it is doubtful that prices will advance much.

Despite early prospects for a good raisin outturn, the industry now indicates a sharply reduced raisin output for this season after the California rain in late September and October. At present, the trade is forecasting a total production of 135,000-150,000 tons of raisins. However, with relatively large carryin stocks, the total supply of raisins during 1982/83 will be adequate for market needs. Raisin prices could advance moderately during the upcoming year, but adequate supplies and indications of light demand make any sharp gains unlikely. The BLS October wholesale price index for raisins was 454.6 (1967=100), slightly below a year ago.

Production of dried prunes, the other major dried fruit item, is currently estimated at 122,500 tons (natural condition), down 23 percent from 1981. The 1982 carryover is sharply larger than last year, but when combined with total production, it still means a substantially reduced supply. Prune shipments got off to a mixed start. Domestic shipments are considerably ahead of last year's level, while export markets are weak. Overall, shipments are running slightly ahead of last season's pace. Even with substantially lower exports, the smaller supply and good domestic movement may firm prices somewhat this season. The October BLS wholesale price index, at 284.2 (1967=100), was 5 percent above a year earlier.

The 1982 pack of frozen fruit and berries will exceed the 1981 level and likely equal or surpass the 1980 high. It is estimated that frozen strawberry imports from Mexico this season will be down sharply. Nevertheless, the industry sources place the 1982 pack of frozen strawberries at 318.9 million pounds, a substantial increase from 1981. Total supplies for the 1982/83 marketing season will be up from the previous season. Deliveries of red raspberries, boysenberries, and loganberries to freezers increased over last season, while those of blueberries and blackberries fell.

The 1982 frozen tart cherry pack is double that of last year, reflecting the abundant crop. This season, 189 million pounds went to freezers--a sharp jump in absolute terms, but a 10-percent drop in percentage shares. As no reserve was allowed, the marketable amount available will equal the total supply.

The October 1 estimates for frozen fruits and berries show cold storage stocks at 587 million pounds, up 4 percent from 1981. Of the 11 fruits listed, only 4 had lower stocks this year. Apple, blackberry, sweet cherry, and peach cold storage stocks declined sharply from October 1, 1981. Apricots, boysenberries, tart cherries, and red raspberries made the largest gains. Despite vastly reduced Mexican imports, frozen strawberry stocks were still up slightly over a year earlier. Prices are likely to remain relatively steady if demand does not improve.

Tree Nuts

Supplies of tree nuts will be slightly less this year. The pecan, walnut, and almond crops are all below last year. Filbert production, though, is expected to reach record levels. Because of the lower outturn, grower prices for almonds are expected to average slightly to moderately above the 1981 rate of 71 cents a pound (kernel weight). Shipments so far this season through October were up 3 percent from a year ago, entirely reflecting a 14 percent larger domestic shipment. Exports were down slightly. Prospects for exports could improve because almond production in Spain and Italy, the leading European producers, is down sharply from last year. On the other hand, the value of the dollar, the world economy, and the price of European almonds and competing nuts will still be determinant factors for the export markets.

With a smaller crop and good demand likely, it is likely that walnut prices will remain above a year ago. Exports were up sharply during the first 2 months of the current marketing year, while domestic shipments, which account for a major share of the market, remained unchanged from a year earlier. However, a record crop in France could mean reduced walnut shipments to Europe this season. Carryover stocks of pecans at the beginning of the season were sharply larger than a year ago. So, even with a sharply smaller crop, the total supply of pecans will be adequate for market needs. Grower prices for the 1982 crop may strengthen somewhat. World filbert production for 1982 is expected to be sharply less than in 1981. Turkey continues to dominate the world market for filberts with an estimated 250,000 metric tons to be harvested in 1982, more than one-third below the 1981 crop. Spanish production is expected to decline 20 percent from 1981, while Italian production will be up sharply over 1981. Current grower prices are near last year's levels.

Per Capita Fruit Consumption

In 1981, total per capita consumption of fruit was estimated at 225.5 pounds (fresh-weight equivalent), 1.2 pounds above 1980. The increase was chiefly due to a greater interest in noncitrus fruit, which helped offset a moderate decline in per capita citrus consumption.

Between 1980 and 1981, each person consumed an additional 5 pounds of fresh noncitrus fruit for a average of 64.7 pounds. This contrasts greatly with a scant increase of 0.9 pound between 1979 and 1980. Indeed, this represented the greatest jump in per capita noncitrus fruit consumption during the past 12 years. Apples and bananas, two leading fresh noncitrus fruit, continued to be strong favorites.

Consumption of bananas increased from 20.8 pounds in 1980 to 21.5 in 1981. Apple consumption showed a sharp increase of 2.9 pounds, rising to 20.8 pounds, a 16-percent jump over 1980. Avocado consumption reached a record 1.9 pounds per person, up 138 percent from 1980. Growing consumer awareness of the nutritional advantages of buying fresh fruit, stepped-up promotional activities, and reduced citrus supplies were factors that helped explain the hike in fresh noncitrus consumption.

A winter cold snap damaged the citrus crop in Florida. As a result, supplies dwindled, prices soared, and the consumption of fresh citrus fell. In 1981, per capita consumption of fresh citrus was 25.3 pounds, compared with 28.9 a year earlier. Oranges, tangerines, and grapefruits all exhibited noteworthy declines. These three accounted for 87 percent of all fresh citrus consumed, with oranges alone making up a hefty 55 percent of the total.

Consumption of dried fruit advanced slightly in 1981, rising to 2.40 pounds per person, compared with 2.37 a year earlier. Raisins remained the leading item at 63 percent of the total. Per capita consumption of frozen fruit, both citrus and noncitrus, fell in 1981--by 1 and 6 percent, respectively. Overall, per capita consumption of frozen fruit was estimated at 2.95 pounds, down from 3.07 in 1980.

Frozen citrus juices showed a slight decline in per capita consumption--9.79 pounds per person, compared with 9.88 in 1980. FCOJ registered a 5-percent drop in its per capita use, while frozen concentrated grapefruit juice (FCGJ) consumption rose 56 percent.

Per capita consumption of canned fruit declined 4 percent in 1981, and this appears to be an across-the-board decrease. Only plums and prunes, berries, olives, and citrus sections showed any gains over the previous year (product-weight basis).

Table 6.--Per capita fruit consumption, 1978-82

Year	Total	Fresh	Canned	Chilled	Frozen	Dried
Pounds, fresh weight equivalent						
1978	213.1	81.5	48.8	12.7	62.2	7.9
1979	219.3	83.3	49.3	11.5	65.5	9.7
1980	224.3	88.6	48.4	12.3	66.0	9.0
1981	225.5	90.0	52.5	8.7	65.2	9.1
1982	221.3	88.0	51.5	9.0	64.0	8.8

Canned, chilled, and frozen includes fruit and juice 1981 preliminary.
1982 estimated.

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A Glimpse at 1983

Increasing consumer demand will probably push 1983 fresh vegetable production near 1982's record-high. Both grower and retail prices should rise moderately. The larger 1982 tonnage of processing vegetables translated into increased packs, which will moderate any price rises for most canned and frozen items in the coming year. Meanwhile, because of large crops, prices for potatoes, sweetpotatoes, and dry beans will likely average lower during the coming marketing season. However, an economic recovery and, subsequently, increased consumer purchasing power could move vegetable prices upward. Nevertheless, the expected smaller rise in marketing costs will help hold consumer prices down.

Fresh Vegetables

1982 Summary

Production of fresh vegetables and melons will probably be the largest ever in 1982, with slightly increased area and yields contributing. Most notable were the larger outturns of tomatoes, onions, carrots, and broccoli.

Both grower and retail prices surged during winter 1982 as a Florida freeze interrupted tender vegetable shipments and a whitefly infestation in California's Imperial Valley reduced lettuce supplies. Prices were then fairly steady until this summer when large supplies and slowed produce sales forced grower and retail prices down substantially. September's grower prices were the lowest in four years, while retail prices that month were the lowest in over a year. The poor market environment this summer forced some growers to abandon some lettuce, tomato, and cantaloup acreage.

For all of 1982, the index of grower prices for fresh vegetables will average from 120 to 123 (1977=100), compared with 135 and 110 during 1981 and 1980, respectively. Despite the lower acreage this year, growers enjoyed an excellent 1981 season, when lower production of some items, strong export sales of onions, and some marketing gaps combined to sharply increase prices and revenues to growers. In contrast, the retail price index for fresh vegetables during 1982 will average 6 to 8 percent above 1981's 267 (1967=100). The higher retail prices this year in the wake of lower grower prices may be caused by retailers increasing their margins this year, which were probably squeezed by 1981's record-high grower prices.

Table 1.--Indexes of fresh vegetable prices, 1980-83

	Grower (1977=100)					Retail (1967=100)				
	I	II	III	IV	Annual	I	II	III	IV	Annual
1980	100	116	114	119	110	220	250	231	153	239
1981	163	127	121	128	135	287	275	258	248	267
1982	260	117	99	100	120-123	341	302	250	260	285-290
1983					125-140					300-330

1983 Outlook

Several factors will influence fresh vegetable prices during 1983. On the supply side, weather, as always, will play its key role by affecting the size and timing of crops. Also, because the peso devaluation tends to make the American market more attractive, larger imports from Mexico are possible in the coming winter and spring. This could push growers' prices down. Conversely, a recurrence of the whitefly virus that plagued California and Arizona lettuce growers last winter could limit production and sharply boost prices.

With respect to demand, consumer expenditures for food and beverages will probably grow very slowly next year. This probable slack demand for food could keep downward pressure on prices. However, production and per capita consumption of fresh vegetables and melons has advanced steadily over the past decade, rising from 118 pounds in 1969 to 126 in 1981. Heightened consumer awareness of nutrition has probably been the primary factor in the rise. This increased demand has undergirded fresh vegetable prices over the past decade.

Reflecting the higher consumption of fresh vegetables, produce now accounts for about 7 to 8 percent of total grocery store sales, up from 5 to 6 percent a few years ago. The average number of items stores typically handle also has dramatically rose. In addition, a 1982 Gallup survey's results showed 64 percent of women and 57 percent of men desire a salad bar in a restaurant, sharp increases from the last survey in 1975.

Grower prices for fresh vegetables should resume their upward trend during 1983. Over the past 20 years, growers received price gains similar to the rate of inflation, which kept their real prices steady and induced larger production to meet the demand. For 1983, the index of grower prices will likely average from 125 to 140. Meanwhile, retail prices will also probably advance moderately in the coming year. The retail price index for fresh vegetables will probably average between 300 and 330 during 1983. Marketing costs account for about 30 percent of retail vegetable costs, therefore the expected small rise in marketing costs will moderate any price rises.

Table 2.--Per capita consumption of vegetables

	Fresh		Canned		Frozen	
	Farm weight	Retail weight	Farm weight	Retail weight	Farm weight	Retail weight
	Pounds					
1961	104	96	81	45	15	7
1971	96	88	93	54	20	9
1976	101	89	102	55	21	10
1981	105	96	92	48	23	11

Processed Vegetables

Tonnage of Major Vegetables Increases

Contracted tonnage of the four major processing vegetables (snap beans, green peas, sweet corn, and tomatoes) rose to 10.8 million tons this year, up nearly a fifth from last year. Tomato production, which accounts for two-thirds of the total, increased by over a fourth. The large rise comes after sharply reduced crops in 1980 and 1981 left supplies of tomato products very tight.

The sweet corn outturn, spurred by increased per capita consumption, rose to a record high. In contrast, green pea production has declined in recent years in the face of falling per capita consumption. This year's output, down moderately from 1981, is the lowest since 1954. In addition, snap bean tonnage declined to its lowest level since 1976. For these side-dish vegetables, production for freezers rose substantially while output for canners fell.

Meanwhile, production of dual-use crops during the first half of 1982 showed mixed results. Output of broccoli and carrots for fresh market and processing rose moderately from last year, while the cauliflower outturn declined about a tenth. Rainy spring weather in California reduced the broccoli and cauliflower harvests. For second-half 1982, the output of broccoli and carrots again is expected to gain moderately from a year ago (based on 1979-81 average yields), while cauliflower production will rival that of last year.

Table 3.--Canned vegetable supplies
and disappearance 1/

Year	Pack and carryover	Disappearance
Million cases 24/303's		
1979/80	322	266
1980/81	301	253
1981/82	282	237
1982/83	270-290	

1/ Eight leading items.

Table 4.--Frozen vegetable supplies
and disappearance 1/

Year	Pack and carryover	Disappearance
Million pounds		
1979/80	2,927	2,156
1980/81	2,638	2,206
1981/82	2,684	2,162
1982/83	2,755-2,855	

1/ Eight leading items.

Frozen Supplies Increase, Canned Supplies Little Changed

For 1982/83, a moderate increase in the pack of frozen vegetables will more than offset the small decrease in carryover stocks. Thus, frozen supplies will be the largest since 1979/80. The aforementioned rises in raw tonnage apparently have been translated into larger packs. On October 1, stocks of frozen vegetables reached a record-high 2.1 billion pounds, one-fourth more than last year and nearly a fifth larger than the 1977-81 average. Holdings of all items were above a year ago except spinach and brussels sprouts. The larger stocks may also reflect dampened sales.

Meanwhile, supplies of the major canned vegetables will approximate last year's. Tomato products and sweet corn will probably increase because of the gain in raw tonnage. Although little pack data are yet available, 1982/83 supplies of lima beans, snap beans, and green peas will likely be substantially reduced from last year. Supplies of these vegetables have steadily declined the past several years as per capita consumption has trailed off.

Little Change Expected In Prices

Wholesale and retail prices of processed vegetables have remained stable during 1982, in contrast with 1981. The Bureau of Labor Statistics (BLS) wholesale price index for canned vegetables stood at 240.6 (1967=100) during October, a 1-1/2-percent rise from a year ago, and the lowest reading in 1982. Trending upward throughout the year, the wholesale index for frozen vegetables equaled 284.7 (1967=100) in October, up 6 percent from last year. The BLS Consumer Price Index for processed vegetables was 139.8 during September, a 3-percent rise from a year earlier. For 1982, increases in the three indexes will be smaller than in the previous 2 years.

The slower price increases are primarily traceable to a smaller rise in the farm-to-retail price spread. The spread will average 4 to 5 percent higher during 1982, compared with a gain of more than a tenth in 1981. Smaller wage hikes in food-processing industries have contributed to the smaller spread increases. In addition, some softness in demand, especially for canned vegetables, has probably limited price increases so far in 1982.

Processed vegetable prices will probably vary little through mid-1983. However, the enormous quantity of frozen vegetables held on October 1 may present some price reductions in the months ahead. Prices of sweet corn, carrots, green peas, and snap beans, in particular, could come under pressure.

Canned vegetable prices (as measured by the BLS wholesale price index), which have actually declined relative to the start of the year, will likely exhibit stability. Shipments of canned vegetables have been slow in 1982, and the pace is not likely to pick up dramatically in the months ahead. However, some items, such as snap beans and green peas, are in relatively short supply, and their prices could move upward. Although the pack of tomato products should be up considerably this year, the carryover was also low. This uncertainty as to the magnitude of supplies may keep prices from falling in coming months.

The Consumer Price Index for processed vegetables will probably average 3 to 7 percent higher next year, compared with annual rises of 6 and 12 percent in 1982 and 1981, respectively. Smaller increases in marketing costs, which follow general inflationary patterns, will also probably temper any price gains for processed vegetables.

1983 Acreage Prospects

Despite the larger pack of tomato products in 1982, carryin supplies were generally very low. Therefore, some shortages of tomato products may occur later in the marketing year. This could cause canners to contract for about the same or slightly higher tonnage in 1983 as the year before. Because of the nature of the 1983 cotton acreage diversion program, some extra area of tomatoes could be planted in California. Also, the favorable 1982 contract prices combined with lackluster crop alternatives suggests growers may be willing to grow more tomatoes next year. Contract prices in 1983 will likely be similar to 1982's, although strong sales in first-half 1983 could boost the terms.

Processors of the other major processed vegetables during 1983 will likely reduce contract area. Sweet corn area will probably decline moderately after this year's bumper crop. Meanwhile, area of both green peas and snap beans could increase in light of this year's small canned packs. Contract prices to growers will probably approximate 1982's. With low feed grain and soybean prices, processors' should be able to find many growers willing to produce for them. Acreage devoted for broccoli and cauliflower production is expected to climb again in 1983.

Consumption Highlights

Per capita consumption of processed vegetables relative to fresh vegetables has waned in recent years to 51 percent of the total, down from the peak of 55 percent of 1973. Americans have clearly been substituting fresh vegetables for processed vegetables over the past decade. That is a reversal of the trend that persisted from World War II to the early 1970's. Heightened consumer awareness of diet and nutrition appears to be the cause of the switch in tastes and preferences. Frozen vegetables consumption has continually risen, albeit slowly, while that of canned vegetables has fallen.

Among individual items, several trends emerge. Americans now consume more tomato products, primarily because of the recent popularity of ethnic foods (e.g., Italian and Mexican). Meanwhile, consumption of traditional side-dish vegetables, such as canned corn, peas, beans, and beets, has declined markedly. The high salt content of these products probably has slowed sales of these items and contributed to increased frozen use. In addition, Americans today eat fewer dishes per meal, and frozen french fries have heavily replaced vegetables in the restaurant trade. National-brand canners' have reacted to this trend by introducing low-sodium canned vegetables in recent years. Finally, frozen broccoli and cauliflower consumption has surged over the past decade.

Potatoes

1982 Fall Crop Largest Since 1978

The 1982 fall potato crop is currently forecast at 307 million cwt, a 4-percent rise from last year and the largest harvest since 1978's record high. Favorable grower prices the past two years spurred an increase in acreage and caused the higher outturn. Yields declined slightly. Total 1982 production is placed at 350 million cwt.

Output is higher in the Central and Western States, while poor growing conditions have reduced the Eastern States crop. Idaho and Washington, the top producing States, had good growing conditions which moderately advanced output. Meanwhile, the Maine crop is the smallest since 1939, and rainy weather in the Red River Valley allowed Wisconsin to become the Nation's fourth-ranked potato State.

Prices To Average Lower

With higher production and the stable nature of potato use, grower and retail prices during the 1982/83 marketing season will probably average substantially less than a year ago. During the past several years, a fall crop greater than 300 million pounds has tended to push prices down considerably. However, good quality in many areas could boost prices. In addition, the October average grower price, while less than half of the June and July prices, were only 4 cents below October 1981's price. Prices after October generally increase or hold steady through the ensuing marketing season. Therefore, this evidence may imply some underlying strength for potato prices.

Processor demand will also affect prices. Frozen potato stocks on October 1 totaled more than 10 percent above a year earlier, but only slightly higher than the 1977-81 average. With increased frozen stocks on hand, processors may be reluctant to purchase overages on contracts. The larger available supplies would probably keep prices on open-market purchases at modest levels. Also, with softness in the general economy, consumer demand may not warrant processor purchases. However, apparent disappearance of frozen potato products during 1982 is above last year, when per capita consumption reached a record. If that demand strength persists during first-half 1983, prices could firm up.

Growers will probably receive a season-average price of \$4 to \$4.50 per cwt in 1982/83, compared with \$5.41 and \$6.55 for 1981/82 and 1980/81, respectively. Retail prices of tablestock potatoes will also fall during 1983, and probably average 20 to 25 percent less than 1982. Retail prices of frozen french fries have risen each year since the mid-1970's, and will probably advance next year, especially if the current sales pace is maintained. Retail prices of french fries have declined from a year ago in recent months, the first such drop in several years, although wholesale prices during October were slightly above last year's.

1983 Acreage Prospects

Potato production cycles every three or four years. A low production year increases prices, and growers produce more in response. As production rises and/or peaks, prices drop, which forces lower production in subsequent years. Potato output in 1982 reached its highest level since 1978. Was 1982 the turning point in the next cycle? If so, it would be the first time since the mid-1960's that a production peak didn't exceed the previous one.

The fundamentals of the market present a mixed outlook. Grower prices will average substantially less than last year, which points to reduced acreage as farmers seek out alternatives. In addition, demand for potatoes this fall has been termed by the trade as being slow. However, if the relative strength in the frozen potato products market persists through early 1983, processors could contract for larger acreage in 1983. A hint of a pickup in the general economy could also provide impetus for larger acreage next year.

Per Capita Consumption Down in 1981

Per capita potato consumption totaled 115 pounds (fresh-weight equivalent) in 1981, compared with 118 during 1980. A rise in processed use--frozen potato product consumption reached a record high--was not enough to offset a decline in tablestock consumption. Between 1970 and 1981, consumption ranged from 113 to 124 pounds, averaging 118 pounds. In general processed use has been stable over the past decade, while tablestock consumption has varied with the size of the crop. This contrasts with the 1960's, when processed consumption (mainly french fries) rose 130 percent, while tablestock use declined by a third.

Sweetpotatoes

The 1982 sweetpotato crop, placed at 14.6 million cwt, is the largest since 1965. Growers enjoyed two successful seasons price-wise during 1980/81 and 1981/82, when they received an average price of \$13.60 per cwt. Those record prices caused farmers to increase area this year. In addition, exceptional yields boosted production.

Prices have dropped precipitously since summer in the face of this year's large crop. Growers received an average price of \$6.23 per cwt during October, compared with \$10.50 a year earlier and \$18.10 in June (when marketings were very light). That was the lowest monthly price since 1976. Factors point to continued low prices during 1982/83. Per capita consumption has displayed no discernible trend since the early 1970's, being steady at about 5 pounds per year. This has caused rather thin markets which can cause wide price swings--price decreases in 1982/83--from one season to the next. In addition, little strength is expected from the industry's canning segment, which typically uses about a fifth of each year's crop. Canned stocks this fall were up sharply from last year, and shipments have been sluggish the past couple of years. For the entire 1982/83 season, growers will likely receive \$8 to \$11 per cwt. The price drop should force an acreage and production cutback in 1983, which in turn would improve grower prices in late-1983.

Table 5.--Production and prices received by growers, 1980-82

	Potatoes		Sweetpotatoes		Dry Beans	
	Production	Price	Production	Price	Production	Price
	Million cwt	\$/cwt	Million cwt	\$/cwt	Million cwt	\$/cwt
1980	302.9	6.55	11.0	13.60	26.4	28.00
1981	338.6	5.41	12.8	13.60	31.8	21.60
1982	350.0	4-4.50	14.6	8-11	25.2	13-18

Dry Beans

Production Down This Year

The 1982 dry bean crop is forecast at 25.2 million cwt, a 20-percent decline from 1981, but still the third largest crop on record. Farmers cut back harvested area 17 percent from a year earlier because of discontinued Mexican contracts. Average yields, at 1,391 pounds an acre, were down 4 percent.

With the exception of California and Michigan, most bean-producing States will have reduced outturns this year. All the major States growing pinto beans are exhibiting acreage declines, but it is hard to determine whether total acreage and production decreases are solely attributable to the decline for this particular bean.

Bean Prices To Remain Low

The market is undergoing an adjustment period as the new crop comes on the scene. Prices reflected light demand for an abundant supply of beans, and October prices were the lowest since 1973. Grower prices in October, at \$13.40 per cwt, showed a sharp dip from 1981 and reflect market uncertainty over Mexican sales. Indeed, f.o.b. prices for pinto and black turtle beans (the mainstays of Mexican sales) are especially hard hit.

Despite sharply lower prices, it is doubtful that domestic demand will strengthen to the extent needed to firm up prices, as it is relatively inelastic. Exports constitute the largest portion of bean sales, and there the situation presently is sluggish. Argentina expects a good crop of beans and will likely not be importing any great quantities. Meanwhile, the Brazilian Government has authorized exports of black and colored beans because of its good harvest and ample stocks. Canada will have a good offering of white pea beans, which compete with Michigan's production.

Mexico, which took more than a fourth of the 1980 and 1981 crops, currently is quiet because of adequate stocks of beans and reduced purchasing power resulting from its February 1982 devaluation of the peso. The bean crop there has been damaged by bad weather. Nevertheless, sources in Mexico expect to see purchases of only 50,000 metric tons during the upcoming year, vastly below the 400,000 tons bought the previous 2 years. However, given Mexico's inability to meet its self-sufficiency goals and its probable depletion of existing stocks, it is likely that this downturn in bean purchases will not be a permanent phenomena.

Given existing conditions, it is likely that bean prices will continue to lag appreciably behind the peaks of the previous 2 years. This season's average price to growers will range between \$13 and \$18 per cwt. Given the bleak price outlook because of stagnated export demand, there will probably be a further retrenchment in 1983 production.

Mushrooms

Production Continues To Climb

Since 1966, domestic mushroom production has consistently risen. Output in 1981/82 totaled a record 517 million pounds, a 10-percent gain from the previous year. The Eastern States continue to produce the greatest portion, with 69 over two-thirds of total output.

In addition to higher production over time, there has been a dramatic change in the output mix. Fresh-market production is now over 60 percent of the total, compared with less than half only four years ago. The shift has occurred because of the tough competition from imports in the canned segment of the industry. In addition, growing consumer familiarity with fresh mushrooms has made yesterday's produce specialty a produce staple.

Prices to growers averaged 81 cents a pound during 1981/82, up a penny from the year earlier. A slight rise in fresh-market prices to 97 cents offset a decline in prices for processing mushrooms, the lowest level since 1975/76. That decline points up the current problems of the domestic canned mushroom industry.

Import Update

Added duties on imported processed mushrooms have seemingly stalled growth in imports. Imports during 1981/82 were a sixth less than in 1979/80 when the higher tariffs became effective. Also, the imports' share of total processed supplies fell to 37 percent in 1981/82 from 43 percent in 1979/80. The higher duties will be terminated on September 30, 1983.

The People's Republic of China (PRC) has replaced Taiwan and South Korea as the leading U.S. import supplier. China's recently-won favored-nation trade status probably has contributed to increase. In response to the larger imports from the PRC the American Mushroom Institute (AMI) filed a petition this summer with the International Trade Commission (ITC) against Chinese imports. Claiming Chinese imports are injurious of the domestic industry, the AMI urged quantitative restrictions to remedy the alleged market disruptions. The outcome was inconclusive, as the ITC voted 2-2 on the issue.

Outlook

Mushroom production in 1982/83 will probably increase again to a new record. Growth in the higher-valued fresh-market segment will propel the rise. Processed mushroom output will likely be near 1981/82's. Average grower prices may rise slightly in the coming year.

Earlier this year, the Agricultural Marketing Service of the USDA completed a study on options the processed industry--centered in the Middle Atlantic States--has for coping with the import competition. Conclusions from the study suggest that domestic canners can't compete with imports, and that their future probably rests in an expansion of the fresh market. To some extent, this is happening. However, growers of processed mushrooms are caught in the structural change of the industry. Many have not coped with the switchover from processed to fresh. Thus, many are going out of business, while others find it difficult to produce quality fresh mushrooms.

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There is a widespread view that consumer credit has ballooned in recent years, posing serious questions about the financial health of the important consumer sector of the American economy. Recently both media observers and public policy makers have focused on consumer credit growth as a problem and as cause for alarm. Not long ago President Carter even briefly imposed formal consumer credit controls as part of one of his economic offensives in 1980. Since that time consumer credit growth has been modest at best (and negative in real terms), but it nonetheless remains a convenient target for critics. For example, in March, 1982 witnesses at House Judiciary subcommittee oversight hearings on bankruptcy blamed excessive consumer credit growth for the upsurge in consumer bankruptcies since 1979. At the same time on the other side of the Capitol, a Senate subcommittee held hearings on a bill (S 2214) to control consumers' "credit explosion" which, according to the sponsor, had "pushed interest rates to all time highs." It seems that consumer credit growth has joined Arabs, landlords, oil companies, and the Federal Reserve Board on the list of useful scapegoats for economic ills.

However, like other complex phenomena, consumer credit requires a close look for full understanding. Beyond correct facts, full understanding also requires decent analysis. Careful analysis may show, for example, that market trends which appear disturbing to a casual observer are actually not especially worrisome. Or, that greater attention should be paid to trends which are missed entirely in a quick look. Furthermore, study can suggest the proper perspective for viewing events. Trends that appear highly significant at first glance may appear less (or more) significant when examined in proper context. What is needed is a dispassionate review of consumer credit trends over the past two decades to explore more carefully the question whether credit growth has been excessive. While what is "excessive" or "disturbing" lies to a great extent in the eyes of the beholder, examining the facts and placing them in perspective should help delineate the range of remaining disagreement. But first, a look at possible causes of understanding gaps seems in order.

The Mythology of Consumer Credit

Together with spouses, mothers-in-law, and the Internal Revenue Service, consumer credit is pervasive enough that it has become stock material with stand-up comedians. In such an environment it is not surprising that consumer credit has its own mythology, although the humor wanes somewhat with the realization that consumer credit myths are being advanced as arguments in our nation's legislative halls. Myths in this area abound; three are probably most influential in Washington today.

First is the Tremendous Growth myth. Disciples contend that imprudent consumers and irresponsible creditors have interacted to cause extremely rapid credit growth. Nautical images are common in descriptions - consumer borrowers are alleged to be swimming, sinking, or drowning in "seas of debt" and lenders are reported to be sailing in "uncharted waters." Tremendous Growth is advanced as the cause of all sorts of economic problems ranging from inflation, high interest rates, and other macroeconomic dislocations all the way to personal bankruptcies.

Second is the Uncontrollable Plastic myth. Adherents of this view hold that availability of credit cards is in large part responsible for Tremendous Growth in credit, presumably because consumers armed with credit cards cannot control their own spending. Drug culture images are more common here - the United States is a nation of credit card "junkies" who "pop plastic" for a spending "high." Since Uncontrollable Plastic supposedly leads to Tremendous Growth, all the evils attributed to Tremendous Growth are also attached to Uncontrollable Plastic, although one step removed.

Third is the Better Off Without myth. Believers argue that because consumers cannot practice self denial with respect to unneeded consumption on credit, they would be better off if credit were unavailable. Alternatively, if only consumers would not use so much credit for consumption, they would save more and be better off. Images here tend to be moralistic and even medieval in tone - since living beyond one's means is bad, the engine of doing so (credit) should be forcefully removed by a more knowing hand (presumably, government). Better Off Without is often used as an argument in support of low finance rate ceilings on consumer credit. If creditors cannot make a profit, so the argument goes, they will be driven from the market. However, this would leave the public better off because people would be forced to overcome their baser (spending) motives.

These three myths arise from well meaning people and they gain adherents because, like the sun circling the earth, a quick look can always find some supporting evidence or cases. By some measures consumer credit has grown rapidly, some people cannot control their own spending, and some people probably would be better off if they were forced to do without credit. Nonetheless, these myths are fundamentally fallacious because they make the error of paying insufficient attention to all the available

facts. Of course, hardly anyone intends to neglect important evidence; the logical train leading to these myths is actually more complex than simple bad faith of the myths' apostles. The preachers of consumer credit mythology are actually the victims of a long list of analytical errors.

Fallacious Reasoning

The first fallacy is money illusion, the failure to express economic magnitudes in dollars of constant purchasing power. Expressed in nominal or current (nonconstant) dollars, consumer credit grew relatively rapidly in the past two decades, but in the inflationary environment of this period, so did wages, salaries, incomes, assets, taxes, and virtually everything else. Without a frame of reference, reporting that some economic indicator grew in nominal dollars provides little useful information. This is the reason why even mass market newspapers and news magazines, let alone more technically oriented analysts, routinely provide reports on wages, income, federal deficits, etc. in deflated as well as in current dollars.

Money illusion is responsible for much of the Tremendous Growth myth. Apostles of Tremendous Growth tend to express trends in nominal dollars (or as percentage changes in nominal dollars magnitudes) with no adjustment for inflation. This has the effect of making debt growth appear much larger than it really is in terms of purchasing power.

A second analytical mistake is lack of context. To achieve a clear picture of the potential importance of changes in any economic indicator, it is usually necessary to identify the context for the indicator. Typically, this means comparing it to something else. For example, in examining consumers' use of credit the interesting question is whether debts rise faster than income or assets, thereby adding to "debt burden."

Failure to specify context also contributes importantly to the Tremendous Growth myth. If proponents of Tremendous Growth paid attention to context they would also be reporting Tremendous Growth of income and assets. In this context different conclusions about credit growth would emerge.

Some preachers of Tremendous Growth have shown at least vague awareness of the need for context. Attempting to provide perspective, proponents of Tremendous Growth occasionally compare credit growth to other things but, unfortunately, usually inappropriately. For example, a common approach is to compare growth of some indicator (like consumer credit) that is denominated in current (inflating) dollars to something that does not inflate. For some purposes this may be all right, but other times it produces silly results.

One silly instance occurred at the recent House Judiciary subcommittee bankruptcy hearings. A bankruptcy judge argued that the number of personal bankruptcies should be compared to the amount of consumer credit outstanding. Credit, of course, is

totted up in dollars that inflate while bankruptcies are not expressed in dollars at all. Thus, any comparisons between the two will be impacted by the effects of inflation and will be guilty of money illusion. This did not occur to the judge. He constructed a ratio and found that the number of bankruptcies per million dollars of credit declined over time, and so he concluded that bankruptcy has become less of a problem. He apparently did not realize that his findings merely reflected inflation in the denominator of his ratio. If he had expressed credit in a way unaffected by inflation, such as constant dollars, he would have freed his analysis from money illusion. He also would have come up with a sharply different conclusion - that bankruptcy is increasing rather than declining. This case would probably have been relegated to the dust bin of hot air in Washington had not the subcommittee's staff seized upon the judge's "analysis" as important information to emphasize to the subcommittee members and the press in a staff memorandum. As a result, the judge's erroneous conclusion gained a life of its own in the legislative halls.

A third error is statistical selectivity. This is the tendency of some observers to select only those data that support their preconceived position on some issue and to ignore the rest of the facts. Of all the errors producing myths about consumer credit, this one is most likely to involve bad faith. Subtle examples include such tactics as selecting particular time spans for review because they illustrate preselected points.

Some people have used a particularly sinister form of statistical selectivity - the zero base period fallacy - to support the Tremendous Growth myth. These people have selected (probably misguidedly rather than in bad faith) the World War II period or before as the base period for measuring consumer credit growth. Since there was little consumer credit before the War, and credit was controlled during the War, in the late 1940's, and during the Korean War, these hardly seem like appropriate periods for comparing to the 1970's and 1980's. Even modest increases will show Tremendous Growth when compared to a small or zero base. An example shows the absurdities that can result. Consumer credit growth since 1890 has been virtually infinite since consumer credit in the base year approximated zero. This growth is obviously far, far greater than income growth over the same period since 1890 income was greater than zero. Although the example may be absurd, it is not much different from comparing consumer credit in 1982 with consumer credit in 1950, 1945, or 1939 as was done in Congressional hearings this year. More relevant would be comparison of the 1980's with the 1970's and 1960's, periods with more modern and freer credit markets.

A fourth analytical error contributing to mythology is the apples and oranges fallacy - the old mistake of comparing unlike things. Even if money illusion is absent, context is specified carefully, and fallacious statistical selectivity is not a problem, erroneous conclusions can emerge if analysts compare different things. This mistake can easily occur if there are changes

over time in definitions. For this reason, knowledge of definitional or conceptual changes in the Federal Reserve Board's statistical series on consumer installment credit are especially important in analyzing consumer credit trends. For example, one important change occurred in 1971. At that time consumer credit extended on oil company credit cards was redefined as installment credit rather than noninstallment credit. This purely definitional change raised the ratio of consumer installment credit repayments relative to disposable personal income 1 1/2 to 2 percentage points in the 1970's compared to the 1960's. Thus, without making adjustments or noting the definitional change, comparisons of the 1970's with the 1960's will be guilty of an apples and oranges mistake.

An apples and oranges problem has contributed greatly to the myth of Uncontrollable Plastic. Over time many people have accepted credit cards as transaction devices, equivalent to but more convenient to use than cash or checks. These card users regularly pay their bills in full when they receive them, rarely or never using the cards to generate time payments or credit in the usual sense. Regardless, this kind of card use is included in Federal Reserve estimates of consumer installment credit extended and liquidated, even if conceptually and behaviorally no consumer installment credit is involved. Unfortunately, it is not possible to remove the cash-substitute component from the installment credit numbers consistently, even if its inclusion sharply biases upward the figures for installment credit extended and repaid. Estimates of the cash substitute component range up to one half of all credit card credit extended, or approximately \$72 billion in 1981, every dollar of which contributes to the Uncontrollable Plastic myth.

A fifth analytical error is the macro-micro fallacy. This fallacy refers to the possibility that observance of any particular trend overall - even over a long period - may reveal little or nothing about the micro changes associated with the trend. As a result, aggregate time series trends may not always be helpful in understanding individual-level developments, and conclusions reached about the individual level may be unwarranted. To illustrate, in the consumer credit area an increase in credit or even in the aggregate repayment/income ratio does not necessarily mean that former debt users are using more debt or are now more burdened as observers often allege. It could mean, instead, that some former nonusers of debt may have borrowed a little. In fact, the aggregate repayments/income ratio can rise over time while current debt users actually become less burdened. And, if the shift is toward more borrowing by wealthier members of the public, which appears to be the case in recent years, then overall financial pressure on the consumer sector could actually decrease while aggregate debt increases.

The macro-micro fallacy has contributed to both the Tremendous Growth and Uncontrollable Plastic myths. Preachers of these myths often overlook demographic changes; but, obviously, demographic influences might be important in explaining credit

trends. For example, the rapid increase in the 1970's in the number of family heads in the family-forming and debt-using 25-35 year old age bracket undoubtedly had an impact on aggregate credit use. More people using a little credit raises the amount of credit and the repayment/income ratio, but, by itself, this fact does not imply more people are overburdened.

A sixth analytical error in evaluating consumer credit is consumption myopia. Apostles of the Better Off Without myth allege that if credit were unavailable consumers would be Better Off because they would consume less and save more. But this overlooks the real reason for most consumer borrowing - investment in consumer capital goods, not consumption.

Consumer capital includes investments in homes, durable goods like automobiles and appliances, and durable services like education and medical care. Each of these forms of capital provides a flow of returns over time in the form of valuable consumer services. None of these capital resources are consumed immediately - here today and gone tomorrow. In this sense consumer capital is exactly analogous to corporate capital like factories, machines, and vehicles which provide investment returns over time to business.

By investing in capital goods both consumers and businesses can raise the total returns and the level of real wealth available to them over time. Economic theory, as well as common sense, suggests that as long as the investment return is greater than the rate of interest on borrowing and if cash flow is sufficient to make the payments, then consumers (like businesses) come out ahead by buying capital goods and services on credit. This is what many of them do. Although accurately measuring the rate of return on consumer investments is difficult, available economic studies indicate the rate of return is very high, making consumer borrowing rational. Thus, if a consumer is prevented from borrowing, the opportunity losses from investments foregone may be substantial. From this point of view, the Better Off Without myth falls down of its own weight.

The Consumer Sector's Financial Condition

Cutting through these myths and the analytical errors that produced them, what really is the consumer sector's financial picture? A careful look at the data shows that consumer credit has indeed increased over the past two decades, but so have the means of repayment. As a result, the consumer sector's debt burden has changed relatively little over the past generation despite the increase in consumer credit.

One potential means of repayment is liquid assets including currency, deposits, and money market mutual fund shares. Liquid assets grew at about the same pace as consumer credit in the 1960's and 1970's, although liquid asset growth was somewhat steadier in nominal dollar terms. At year end 1981 consumers' owed \$328 billion in installment credit (including credit with

oil companies) compared to \$1.8 trillion in liquid assets. The ratio between these two magnitudes stood at 17.8 percent at year end 1981 compared to 18.6 percent at year end 1960, the last year of the Eisenhower Administration. During the intervening 2+ decades this ratio fluctuated cyclically but only slightly, ranging up and down only between 17 and 21 percent (Figure 1). Rather than indicating increased illiquidity in the consumer sector lately, this ratio suggest that households have maintained their installment debt level rather consistently at about 20 percent of liquid assets. Stated alternatively, the consumer sector has maintained liquid assets at about five times its installment indebtedness for an entire generation. And, in mid-1982, this ratio stood at its lowest level in more than two decades.

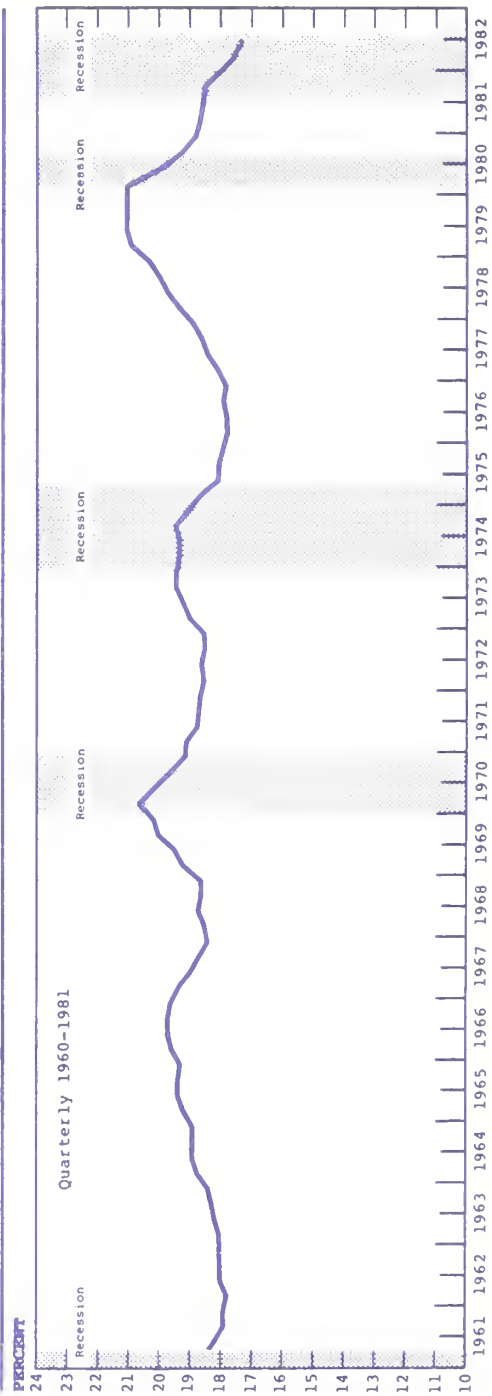
The second way that consumers can liquidate debt is by repaying out of income. Because of the apples and oranges problem two ratios should be calculated after 1970 to highlight the effects of the definitional change to include repayments on oil company credit cards beginning in 1971. In either case the repayments/income ratio shows that installment credit repayments consumed a slightly higher proportion of income in the late 1970's than earlier, but the differences were small (Figure 2). Furthermore, the ratio peaked in mid 1978 and has been declining continuously ever since. Rather than indicating an ever-increasing debt burden, this measure also shows consumers' installment credit debt burden in the early 1980's as about the same as a generation earlier.

A third way to view consumers financial condition is to examine specific measures of financial stress - credit delinquency and bankruptcies. Graphs of the percentage of consumer credit accounts delinquent at banks, finance companies, and credit unions are generally flat and trendless over a long period (Figure 3). They do show some cyclicity, rising during recessions and falling afterward during subsequent recoveries. Before 1979 personal bankruptcies per 1000 households exhibited the same cyclical but trendless pattern until bankruptcies shot up like an arrow beginning late that year (Figure 4). This sharp divergence in pattern arose because of two extraneous developments - the advent of lawyer advertising and changes in the Federal Bankruptcy Code that October that substantially lowered the real cost of declaring personal bankruptcy. The point is that with the special exception of bankruptcies 1979-1981, recent measures of consumers' financial stress are also approximately the same as recorded many years ago.

In sum, consumer credit mythology like the sun circling the earth, is simply not supported by the facts. Nevertheless, mythology lives, and its passionate disciples find easy converts in Washington. Let us hope that like geocentrism, consumer credit myths will disappear without causing too much pain. At the minimum we should expect our nation's leaders to spend their time on problems that really exist.

FIGURE 1

Ratio of Consumer Installment Credit Outstanding to Consumer Sector's Liquid Assets



National Consumer Finance Association Chart. Source: Federal Reserve Board

FIGURE 2

Ratio of Repayments of Consumer Installment Credit to Disposable Personal Income

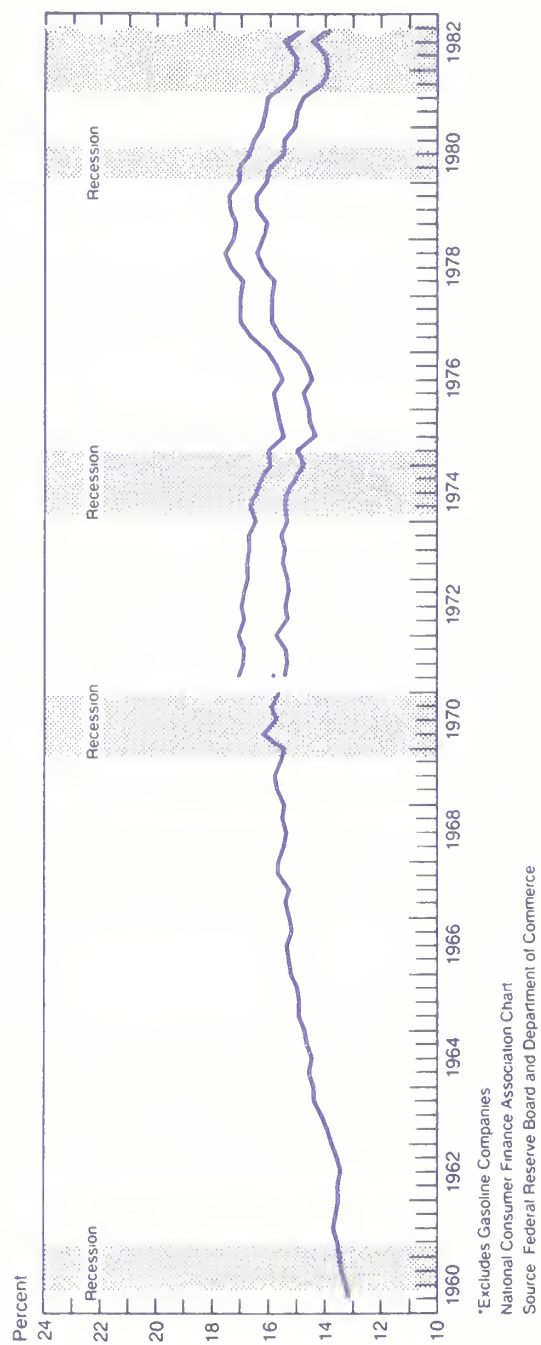


FIGURE 3

Number of Loans Delinquent as a Percent of Total Number of Loans Outstanding, Year-end

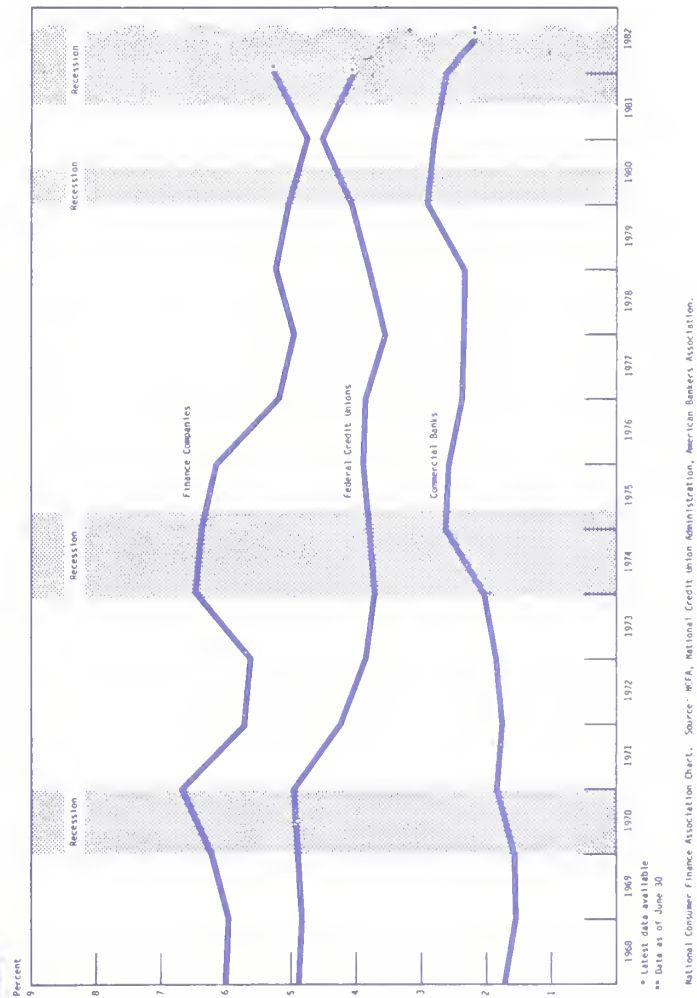
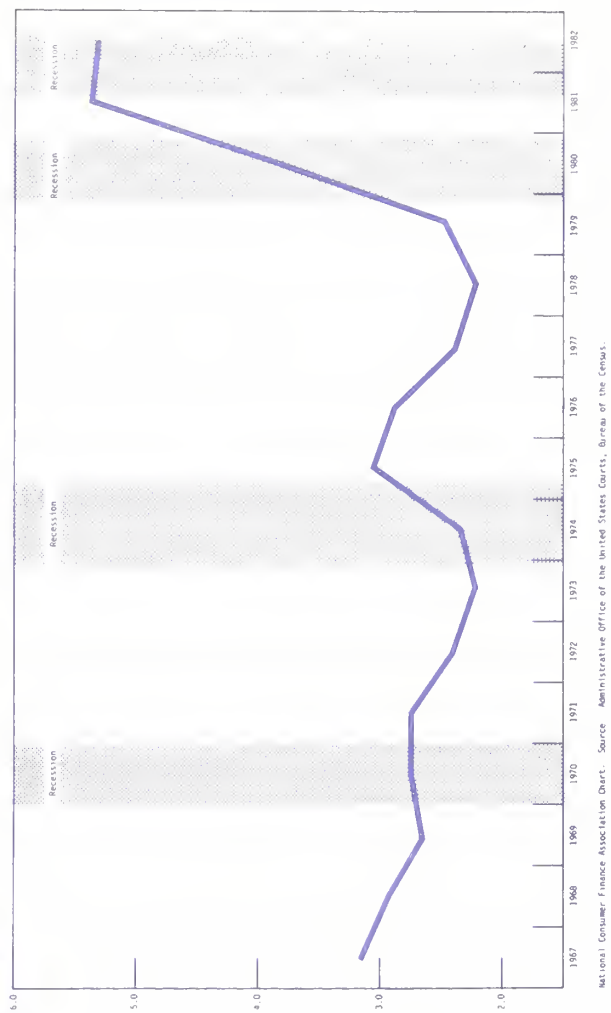


FIGURE 4

Number of Bankruptcy Filings Per One Thousand Households,
Total U.S., 1967-1982



John Dunmore, Chief
World Analysis Branch
Economic Research Service, USDA

OUTLOOK '83



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Food Grain Overview

Food grains, wheat and rice combined, make up nearly two-thirds of all the grain consumed, in a more or less direct manner, as food around the world. Given the importance of wheat and rice as food staples, and with food grain production accounting for just under half the world's annual output of grain, it is important that, before getting heavily into the 1982/83 outlook, the discussion focus initially on the world food grain situation as it developed over the 1981/82 season and the types of pressures evident as the 1982/83 season began.

The 1981/82 world food grain situation could be characterized as a year of oversupply. Production declined from the 1980/81 level, behind a sharp fall in Soviet wheat production, but exceeded world food grain requirements by nearly 7 million tons, and 1981/82 world ending stocks of food grains increased. Despite increased import demand (record world trade) global stocks increased and resulted in lower prices for much of 1982. However, the build-up in stocks and downward pressure on prices of food grains, particularly wheat, was not nearly as severe as that for feed grains.

On a global basis, Mother Nature was kind in 1982 and world food grain production (rice, milled) is now estimated at a record 730 million tons up about 1 percent from last year. World utilization of food grains is expected to be up as well, but will remain below world production. Generally better crops and poor financial conditions in major food grain importing regions will reduce import demand with world trade expected to fall from last year's record. The expected oversupply in world markets in 1982/83 will lead to a further build-up in world stocks with downward pressure on prices likely to continue at least until the outcome of the 1983/84 harvests is clear. Much of the world stock build-up will take place in the United States. Overall, the world stocks-to-use ratio (world stocks as percent of world use) for food grains should increase to nearly 15 percent.

While aggregate 1982/83 food grain production is currently forecast to be a record, and global stocks are expected to rise, the individual production/utilization balances for world wheat and rice will move in opposite directions. A separate review of the outlook for world wheat and world rice follows.

World Wheat Outlook

World Wheat Crop for 1982/83 a Record

At the level currently forecast, world wheat production would be a record 462 million tons--15 million larger than the previous 1978/79 record, and 3.5 percent, or 16 million tons above the 1981/82 level. An area of 234 million hectares will likely be harvested this year, 1.5 percent below the 1981/82 record, but global yields at nearly 2 tons/hectare are up 5 percent from last year, and a new record.

Contrary to the situation last year, only a small part of the world increase--0.5 million tons--will come in the United States. Foreign production will increase 15 million tons from last year's level. Prospects in the major exporting countries are good, with the production forecast of 181 million tons just 1.6 million tons above last year. Record production in the European Community and Canada and near record in Argentina will more than offset the drought-reduced crop in Australia, where wheat output is now expected to be only half the 1981/82 level. Such a reduction in the Australian crop--the poorest in 10 years--may necessitate imports of small quantities of wheat for domestic use to free up supplies to meet export commitments under long-term agreements. In Argentina, increased wheat area combined with favorable crop conditions to date is likely to result in a near-record production of 11 million tons--over 40 percent larger than the 1981 output. While early frosts and delayed harvesting will likely lower the overall quality of the Canadian crop (approximately 40 percent of the crop is expected to grade below No.2 CWRS.), wheat output is forecast to reach a record 27 million tons. The 1982 wheat crop in the countries of the European Community was the largest ever. A 2.5 percent rise in sowings and record yields boosted output nearly 4 million tons, or 7 percent above the 1981 crop.

The net production increase of 1.6 million tons in the major exporting countries is small compared to the 10.8 million ton increase in the major importing countries, largest of which are in Eastern Europe and the USSR. Favorable late season weather for wheat in Eastern Europe combined with an increased area harvested led to an 11 percent increase in production. Soviet wheat production this year is forecast at 86 million tons, while 6 million tons better than the poor 1981 harvest, it is still the second smallest crop since the disastrous 1975/76 crop. The cumulative effect of the poor winter wheat crop development in the early growth stages, a lack of sufficient moisture in the spring, and a 2 million hectare drop in area harvested are the major factors behind the fourth consecutive poor wheat harvest. Crop production in China is likely to be up 1 million tons this year.

A marked increase in plantings initially boosted prospects for this year's Brazilian crop, but warm, humid conditions and excessive rainfall promoted a fungus disease in many areas and yields will be below last year's. Brazil's wheat crop is now estimated at 2.1 million tons, just below last year's output. In North Africa, estimates now put Morocco's wheat crop at 1.8 million tons, double the drought-reduced outturn of 1981. The increase in the Moroccan crop more than offsets the 40 percent drop in Algerian wheat production, so that the North African region's harvest is expected to be nearly 10 percent larger. In summary, the major importers' wheat outturn is expected to be up almost 11 million tons from 1981.

Utilization in 1982/83 to be little changed from levels of past four years

Total wheat utilization this year is estimated at 454 million tons, up 15 million tons from last year's reduced level, but 8 million tons below the forecast world production level. World usage of wheat dropped to 438 million tons last year, all due to declines in use of wheat for feed in the USSR, where a poor harvest and a shift toward heavier dependence on coarse grains in animal rations caused wheat feeding to drop 11 million tons. This year, however, Soviet use of wheat for feed is expected to be up 2 million tons. Not only was Soviet wheat production higher this year but the quality was poor, so that a larger amount of domestic wheat went directly into use as animal feed. In the European Community, however, record supplies and lower internal prices relative to imported corn is expected to boost wheat feeding 7 percent to 14.5 million tons, making wheat 20 percent of all grains fed in the EC. In total, world use of wheat as feed is up 3.6 million tons to 81 million tons, 18 percent of total wheat consumption.

In most other major wheat consuming regions/countries--China, India, North Africa/Middle East, Pakistan, and Bangladesh, which together account for almost 40 percent of world wheat utilization--consumption (almost totally for human use) will be up an average of 3 percent.

Total wheat use in the developing countries has increased at an average rate of about 4.0 percent over the 1970's. Matching this growth in consumption against a growth in population of 2.3 percent per year, indicates that per capita utilization increased about 1.7 percent per year. So far in the 1980's, growth in developing country per capita wheat usage has slowed to less than half the 1970's rate.

The bulk of world wheat production (about 70 percent) is destined directly for human consumption. Direct human consumption of wheat changes largely in response to population, income, prices, tastes, and government policies. The slower rate of growth in per capita food wheat consumption is partly related to the continuing poor economic prospects worldwide, particularly in the low-income developing countries where deteriorating economic prospects, balance of payments problems, little growth in aid or commercial credit flows, and foreign exchange constraints will not allow increased food needs to be fully translated into an effective demand for food grains.

World stock levels to increase in 1982/83

World wheat production is expected to exceed total use by 8 million tons. Stock levels by the end of the 1982/83 season should be up by a like amount, to over 90 million tons--almost a 10 percent increase on beginning season stocks. One measure of global oversupply is the stocks-to-use ratio, which by the end of 1982/83 will hit nearly 20 percent, up from 19 percent last year and 17 to 18 percent in 1979/80 and 1980/81.

The United States is expected to bear the major part of the world wheat stock adjustment in 1982/83. The major importing countries are expected to see a slight decline in wheat stock levels by the end of the season as are the "other" importers. India is the only importer expected to add to

existing stocks in 1982/83. Our competitors in the world wheat market will, as a group, increase stocks less than 1.0 million tons from the beginning of the season--expected stock increases in Canada and a marginal gain in the EC more than offsetting the dramatic decline in Australian stocks. Going into the 1983/84 season, the United States will be holding 44 percent of world wheat, stocks up from a 1979/80 average of 30 percent.

Wheat Stocks

Country/Group	Average	1981/82	1982/83
-- Million tons --			
U.S.	25.5	31.2	39.8
Major Competitors:	25.5	20.9	21.8
Importers	34.3	30.2	28.8
World Stocks	85.3	82.3	90.4
U.S. Share	30%	38%	44%

World Trade likely to fall in 1982/83

The last two decades have seen important shifts in the patterns of world wheat trade. Wheat exports continue to be dominated by the United States with nearly 42 percent of the world market, and by Canada and Australia with a combined 25 percent share. All these countries export over half of their total wheat production. The major change in wheat export patterns over the last two decades has been the increase in exports from the European Community. Domestic price supports--substantially above world prices--have stimulated EC production. Combined with an aggressive export program and lucrative subsidies, the EC now holds a 15 percent share of world wheat and wheat flour exports, a substantial gain considering they only became a consistent net exporter in the early 1970's.

Developing countries play a small role in world wheat exports. Argentina is the only developing country that exports substantial quantities of wheat on a consistent basis. Other developing countries, particularly Turkey, and to a lesser extent, India, have exported small amounts.

Developing countries do make up nearly half of world wheat imports, however. The last two decades have seen rather dramatic shifts in the pattern of wheat imports by the developing countries. In the mid 1960's, South Asia--India, Bangladesh and Pakistan--comprised 16 percent of all wheat imports. Last year, the share was just over 3 percent. The region comprising North African and Middle East countries is now the major wheat importing region, accounting for about 20 percent of world wheat imports. Over the 1970's, imports from that region grew at a rate of 7 percent per year.

Following 3 years of rapid gains, world trade (imports) in wheat and wheat flour for 1982/83 is now forecast at about 103 million tons, down nearly 3.0 million tons from last year's record trade. Many of the developing countries, which formed the base for growth in world wheat trade, are facing financial constraints that limit their ability to buy. With this interruption in the developing countries' import pattern, world grain trade has become increasingly susceptible to variations in markets such as USSR, China, East Europe, and India, which combined represent about 40 percent of world wheat trade and where administrative decisions, more than economic forces, shape import patterns.

The larger crops in Canada, European Community, and Argentina will allow increased exports in 1982/83. The Canadians are expected to have little difficulty in moving lower quality wheat into the export market, particularly with a major customer like China willing to purchase lower grade wheat. In addition, the announced 7.6 million-ton grain sale to the USSR (primarily wheat) may translate into record Canadian wheat export sales of 19.5 million tons, up 2 million tons from last season. The west coast dock strike, which lasted only a few weeks, is not likely to dampen this prognosis for record wheat trade in 1982/83.

European Community exports to third countries are now estimated at a record 16.5 million tons. The record EC harvest has depressed internal prices and, despite the higher export subsidy costs, the Community continues to seek export markets. Authorizations for exports of wheat are now running 47 percent ahead of last year's pace. Evidence suggest that the EC is turning increasingly to the USSR and China as markets for its surplus.

Increased exports on the part of Canada, Argentina and the EC, at 3.6 million tons for 1982/83, are essentially offset by the much lower export availabilities in Australia. Their wheat exports in 1982/83 (July-June) are not expected to exceed 7.5 million tons, down 3.5 million tons from last season. Domestic use of wheat is expected to be up in 1982/83. Wheat feeding will clearly rise to maintain livestock through the drought as forage conditions are poor. The Australian Wheat Board requested and was granted permission to import wheat, if necessary--the aim being to supply some domestic markets and free up additional supplies for export under existing agreements.

Among the major exporters, the United States would seem to be the single adjustor to reduced world import demand for wheat--exports down and stocks up.

On the importer side, most of the decline in trade is expected in East Europe and the USSR. Soviet imports are estimated at 17 million tons, down from 19.5 million tons last year. Soviet wheat purchases in the first quarter of the July-June year were extremely light. A number of reasons have been advanced for the slow start in Soviet purchases--lack of foreign exchange allocations, good availability of forages, a larger crop over last year, and logistical constraints on the inland transportation system. Heavy Soviet purchases have now resumed, with emphasis on wheat, but the slow start and a better crop that previously forecast will hold July-June imports to below last year's level.

Eastern Europe's imports could drop nearly 2 million tons. In addition to an improved outlook for production, which will help to lessen import requirements, foreign exchange and credit problems continue to influence import patterns. Better crops in Latin America, particularly Brazil and Mexico will reduce their import requirements sharply as well. China made heavy purchases early in the year and may import a record 14 million tons by June 1983. Imports by the North Africa/Middle East region could be up 8 percent in 1982/83, having jumped 12 percent in 1981/82.

India is again in the import market for wheat. So far, 2.5 million tons have been purchased, and 1982/83 imports may reach 5 million tons. The increased wheat purchases relative to last year are as much a reflection of a poor rice crop as of problems with the quality of this year's wheat production or procurement progress.

Price and Short-Run Outlook

Historically, world stock-to-use ratios and the overall level of U.S. wheat stocks have proved fair barometers of world wheat price movements. Given the likelihood of an ending stocks buildup for world wheat, the stocks-to-use indicator would point to continued downward pressure on prices. However, U.S. ending stocks, at such high levels relative to world holdings, is probably the more important indicator this year. The U.S. loan rate helps to set a floor price, not only in the United States but in world markets as well. With the world stock build-up almost totally in the United States, U.S. and world prices could drop 5 to 7 percent from last year's averages. Factors that could lend some positive influence on world and U.S. price levels over the next few months would be a final outcome of Southern Hemisphere harvests in Australia and Argentina that is substantially lower than currently forecast or a significant change in import demand, such as increased purchases on the part of China, USSR, or India.

For the 1983 foreign wheat crop, very little retrenchment in area planted is expected on the part of our major competitors. Generally favorable weather should allow trend yields and a foreign crop as large or larger than this year's record. Such a production outcome combined with a static world consumption could lead to lessened foreign import requirements and a world trade in wheat not much improved on this year's.

World Rice Outlook

Rice Production and Trade to Fall in 1983

World rice production for 1982/83 is currently forecast at 398 million tons on a rough basis (268 milled). Although down 3 percent from last year's record, the 1982/83 crop will still be the second largest production ever. The lower production reflects mostly a decline in global yields as area declined marginally. The United States is expected to harvest a rice crop 18 percent smaller than the 1981 record. Foreign production is also expected to be below last year's record. Expectations of reduced harvests in India, Pakistan, and Thailand will more than offset the 3 million ton increase in China and smaller increases in Burma and Japan. Final world

production estimates remain tentative, however, depending on weather developments in the coming months, particularly in India.

World consumption is expected to fall in 1982/83, the first global decline for rice in 10 years. India is the only major rice consumer which expects a drop in consumption in 1982/83, but the drop of 6 million tons more than offsets the continued increase in rice consumption in the rest of the world. With world production expected to fall more than consumption, world ending stocks are likely to be drawn down to 18 million tons, the lowest in 6 years. However, the global stock drawn down will not likely result in much price strength. Most of the drawdown will occur in major exporting/consuming countries such as India, Japan and Thailand where beginning year stocks will augment production in helping to meet domestic consumption and export levels. Continued high stocks levels and good production prospects in the major importers, particularly Indonesia and South Korea, would indicate little or no change in the level of world trade in rice for 1983.

Major Importers

The large stocks held by the Indonesian Government and the prospects for a production level equivalent to last year's suggests that 1983 rice imports are not likely to exceed 400,000 tons, down from an estimated 500,000 tons for 1982.

Exceptional dryness in South Korea through most of the spring and summer months put its rice crop in jeopardy. However, heavy rains in August followed by favorable growing conditions resulted in a recovery of the rice crop. South Korea's rice production is now expected to exceed last year's 7.0 million tons (rough rice). Given the high level of beginning stocks, a crop of 7 million tons or larger would likely limit South Korea's rice imports to 250-300 thousand tons--drawing down its rice stocks to more normal levels to meet increased consumption requirements. This is about the level of exports from the United States that the Korean Government is still committed to take.

The Soviet Union could be the largest purchaser of rice in 1983. Projected Soviet imports are now at 750,000 tons. In the past, India has supplied up to 500,000 tons. Given the short rice crop in India, the Soviet's could turn to Thailand for part of the shortfall. The second and third largest importers in 1982/83 are likely to be Iran and Nigeria both with estimated import requirements of 600,000 tons. As a block, the Middle East countries, particularly Iran, Iraq, Saudi Arabia and the United Arab Emirates, are expected to import 2.3 million tons of rice.

Major Exporters

Most major rice exporters have abundant exportable supplies this season. The 1982 rice crop in Thailand, the leading U.S. competitor in the world rice market, is forecast to drop 1.1 million tons from the record 12.7 million tons (milled) in 1981/82. Dry weather conditions were responsible for the lower production forecast, although timely rains could yet allow some recovery in yields. Despite the lower crop forecast, an expected drawdown in stocks will allow Thailand to remain an aggressive exporter in 1983. Rice is a key foreign exchange earner for Thailand and the Government

has lifted the rice premium and reserve requirement and has been successful in stimulating exports. Thai rice exports for calendar year 1982 are expected to total nearly 3.5 million tons, an all-time high. For 1983, Thai export prospects remain strong at 3.2 million tons.

In South Asia, a weak and late summer monsoon damaged prospects for a bumper rice crop in Pakistan. The Pakistani crop is now forecast down just slightly from last year. In India, the early withdrawal of the monsoon significantly reduced rice production prospects. The crop is now forecast at 48 million tons, 6 million, or 11 percent below last year. As a result, stocks will be drawn down to their lowest level in 8 years, and rice consumption will be held down. In addition, the poorer rice harvest could force wheat imports higher to ensure adequate food grain supplies.

World Wheat Production

Country/Region	Preliminary 1981/82	Forecast 1982/83	Change	
			Actual	Percent
	--Million metric tons--			%
<u>Major Exporters--</u>				
United States	76.0	76.5	0.5	+0.7
Argentina	7.8	11.0	3.2	+41.0
Australia	16.4	8.5	-7.9	-48.2
Canada	24.8	26.8	2.0	+8.1
European Community	54.3	58.1	3.8	+7.0
Total	179.3	180.9	1.6	+0.9
<u>Major Importers--</u>				
Eastern Europe	30.5	33.9	3.4	+11.1
USSR	80.0	86.0	6.0	+7.5
China (PRC)	58.5	59.5	1.0	+1.7
Brazil	2.2	2.1	-0.1	-4.5
North Africa	5.2	5.7	0.5	+9.6
Total	176.4	187.2	10.8	+6.1
World Less U.S. (Foreign)	369.8	385.1	15.3	+4.1
World Less U.S. & USSR	289.8	299.1	9.3	+3.2
World	445.8	461.6	15.8	3.5

World Wheat Trade

Country/Region	Preliminary 1981/82	Forecast 1982/83	Change	
			Actual	Percent
	--Million metric tons--			%
<u>Major Exporters--</u>				
United States	49.1	45.0	-4.1	-8.4
Australia	11.0	7.5	-3.5	-31.8
Canada, Argentina and EC	44.0	47.6	+3.6	+8.2
<u>Major Importers--</u>				
India	2.3	5.0	2.7	+117.4
PRC	13.2	14.0	0.8	+6.1
Mid. East & North Africa	18.5	20.0	1.5	+8.1
Mexico	1.0	0.3	-0.7	-70.0
Brazil	4.5	4.0	-0.5	-11.1
Eastern Europe	6.4	4.6	-1.8	-28.1
USSR	19.5	17.0	-2.5	-12.8
Total Above	65.4	64.9	-0.5	-0.7
World Trade	105.8	103.0	-2.8	-2.6

World Rice Production (Milled)

Country/Region	:	Preliminary	:	Forecast	:	Change	
						Actual	Percent
		1981/82		1982/83			
	:	-- Million Metric Tons --					%
	:						
<u>Major Exporters:</u>	:						
United States	:	6.1		5.0		-1.1	-18.0
Thailand	:	12.4		11.4		-1.0	-8.1
China (PRC)	:	97.4		99.6		+2.2	+2.2
India	:	54.0		45.0		-9.0	-16.7
Pakistan	:	3.2		3.1		-0.1	-3.1
Burma	:	8.5		8.8		0.3	+3.5
Japan	:	9.3		9.6		+0.3	+3.2
Total	:	190.9		182.5		-8.4	-4.4
	:						
<u>Major Importers:</u>	:						
Indonesia	:	22.3		22.3		NC	NC
South Korea	:	5.1		5.2		0.1	+2.0
Total	:	27.4		27.5		0.1	+0.4
	:						
World Less U.S. Foreign	:	270.2		263.2		-7.0	-2.6
	:						
World	:	276.3		268.2		-8.1	-2.9

World Rice Trade (Calendar Years)

Country/Region	:	Preliminary	:	Forecast	:	Change	
						Actual	Percent
		1982		1983			
	:	-- Million Metric Tons --					%
	:						
<u>Major Exporters:</u>	:						
United States	:	2.5		2.7		0.2	+8.0
Thailand	:	3.6		3.2		-0.4	-11.1
China (PRC)	:	.6		0.6		NC	---
Pakistan	:	0.9		1.1		+0.2	+22.2
Burma	:	.8		.8		NC	---
Japan	:	.4		.4		NC	---
	:						
<u>Major Importers:</u>	:						
Indonesia	:	0.4		0.5		+0.1	+25.0
South Korea	:	0.3		0.4		0.1	+33.3
USSR	:	0.8		0.8		NC	NC
Nigeria	:	0.6		0.7		0.1	+16.7
Middle East	:	2.3		2.3		NC	NC
	:						
World Trade	:	12.0		11.7		-0.3	-2.5

World Food Grain Summary

	: 1975/76- : : 1977/78 : : AVERAGE :	: Preliminary : : 1980/81 : :	: 1981/82 : :	: Forecast : 1982/83
	:	-- Million Metric Tons --	:	:
World:	:			
Production	: 628.3	704.6	722.1	729.8
Utilization	: 616.7	711.9	715.2	725.2
Ending Stocks	: 101.9	96.3	103.4	108.0
Stocks/Utilization (Percent)	: 16.5	13.5	14.5	14.9
Trade	: 83.1	110.4	116.8	113.9
United States:	:			
Production	: 61.1	69.4	82.1	81.5
Utilization	: 41.2	23.2	25.4	25.9
Exports	: 31.5	44.9	51.8	47.7
Ending Stocks	: 27.9	27.4	33.3	41.3
U.S. Stocks/Total (Percent)	: 27.4	28.5	32.2	38.2
Soviet Union:	:			
Production	: 87.2	100.0	81.6	87.6
Utilization	: 97.1	119.8	101.3	104.8
Imports	: 7.5	17.3	20.3	17.8
Exports	: .8	.6	.6	.6
Stocks Change	: ---	---	---	---
Rest of World:	:			
Production	: 480.0	535.2	558.4	560.7
Utilization	: 478.4	569.0	588.5	594.5
Imports	: 73.8	92.1	97.5	96.9
Exports	: 50.8	64.6	68.2	69.6
Net Imports	: +23.0	+27.5	+29.3	+27.3

World Wheat Summary

	: 1975/76- :	:	: Preliminary :	: Forecast
	: 1977/78 :	1980/81	: 1981/82 :	1982/83
	: AVERAGE :	:	:	:
	:			
	:	-- Million Metric Tons --		
	:			
World:	:			
Production	: 385.6	439.3	445.8	461.6
Utilization	: 378.0	444.8	438.2	453.5
Ending Stocks	: 81.9	74.6	82.3	90.4
Stocks/Utilization (Percent)	: 21.7	16.8	18.8	19.9
Trade	: 73.5	96.5	105.8	103.0
	:			
United States:	:			
Production	: 57.4	64.6	76.0	76.5
Utilization	: 21.2	21.1	23.1	23.5
Exports (July-June)	: 29.5	41.9	49.1	45.0
Ending Stocks	: 26.8	26.9	31.7	39.8
U.S. Stocks/Total (Percent)	: 32.7	36.1	38.5	44.0
	:			
Soviet Union:	:			
Production	: 85.1	98.2	80.0	86.0
Utilization	: 95.4	116.7	99.0	102.5
Imports	: 7.1	16.0	19.5	17.0
Exports	: .8	.5	.5	.5
Stocks Change	: ---	-3.0	---	---
	:			
Rest of World:	:			
Production	: 243.1	276.5	289.8	299.1
Utilization	: 261.4	307.0	316.1	327.5
Imports	: 65.6	80.5	86.3	86.0
Exports	: 43.2	54.7	58.7	60.6
Net Imports	: +22.4	+25.8	+27.6	+25.4
	:			

World Rice (Milled) Summary

	: 1975/76- :		: Preliminary :	Forecast
	: 1977/78 :	1980/81 :	1981/82 :	1982/83
	: AVERAGE :		:	:
	:			
	:	-- Million Metric Tons --		
	:			
World:	:			
Production	: 242.7	265.3	276.3	268.2
Utilization	: 238.7	267.1	277.0	271.7
Ending Stocks	: 20.0	21.7	21.1	17.6
Stocks/Utilization (Percent)	: 8.4	8.1	7.6	6.5
Trade (Calendar Year)	: 9.6	12.9	12.0	11.7
	:			
United States:	:			
Production	: 3.7	4.8	6.1	5.0
Utilization	: 20.0	2.1	2.3	2.4
Exports (Calendar Year)	: 2.0	3.0	2.5	2.7
Ending Stocks	: 1.1	.5	1.6	1.5
U.S. Stocks/Total (Percent)	: 5.5	2.3	7.6	8.5
	:			
Soviet Union:	:			
Production	: 2.1	1.8	1.6	1.6
Utilization	: 1.7	3.1	2.3	2.3
Imports	: .4	1.3	.8	.8
Exports	: ---	.1	.1	.1
Stocks Change	: ---	---	---	---
	:			
Rest of World:	:			
Production	: 236.9	258.7	268.6	261.6
Utilization	: 217.0	261.9	272.4	267.0
Imports	: 8.2	11.6	11.2	10.9
Exports	: 7.6	9.9	9.5	9.0
Net Imports	: +.6	+1.7	+1.7	+1.9
	:			

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1982/83 Situation - The Records Continue

The 1982/83 situation continued to reflect record production and increasing stocks for the third successive year. Although producers in response to the announced acreage reduction program (ARP) reduced their harvested acreage in 1982, generally favorable growing conditions in nearly all production areas was more than offsetting. Yields rose to an all time high 35.6 bushels per acre producing the largest wheat crop (2,811 million bushels) in U.S. history. The 1982 production was about 1 percent above last year and nearly a fifth higher than two years ago.

Although variable weather conditions throughout the year threatened the final crop outcome, generally favorable growing conditions prevailed from Texas to the Canadian border in the Great Plains wheat belt. The perennial leading States of Kansas and North Dakota harvested their largest crop ever. In contrast, above normal winter damage and excessive spring rains in major Eastern and Southern production areas, along with dry and hot conditions in the Pacific Northwest, reduced yields significantly for both soft red and white wheat.

Overall, wheat growers adjusted the seeding of their 1982 crop only slightly in response to the announced ARP. Winter wheat plantings actually increased to a new high as seeding was completed before the ARP announcement. Spring wheat producers reduced from the previous year's plantings by 9 percent. As a result, total 1982 harvested acreage was below the record 80.9 million acres of a year ago by less than 2 million acres. However, higher yields more than compensated for this decline. Nationally, the average yield per harvested acre was an all time high 35.6 bushels, 1.1 bushels above 1981. A review of acreages, yields, and production by various production regions for 1981 and 1982 compared to historical data outlines regional changes in the production of wheat in the U.S.

Region	Harvested Area				Production				Average Yield	
	1976/77	1981/82	1982/83		1976/77	1981/82	1982/83		1976/77	1982/83
Pacific N.W.	6.1	5.9	5.5	:	277.2	335.5	288.2	:	45.8	52.0
Southern Plains:	28.3	32.0	33.0	:	756.2	872.2	1045.7	:	26.7	31.7
Northern Plains:	24.1	24.9	22.7	:	625.1	737.5	756.0	:	25.9	33.3
Southeast	2.2	6.9	8.7	:	75.1	287.9	317.7	:	33.4	36.3
Corn Belt	7.9	8.7	6.9	:	291.7	394.2	275.2	:	37.0	40.1
Southwest	1.7	1.9	1.5	:	100.6	129.6	104.2	:	59.8	67.2
Northeast	.6	.7	.6	:	22.4	26.4	23.4	:	34.7	39.0
U.S. Total	70.9	80.9	79.0	:	2148.8	2793.4	2810.5	:	30.3	35.6

PNW = ID, OR, WA; Southern Plains = CO, KA, NB, NM, OK, TX, WY, Northern Plains = MY, MT, ND, SD; Southeast = AB, AR, FL, GE, DY, LO, MI, NC, SC, VA, WV; Corn Belt = IL, IN, IO, MC, OH, WI, Southwest = AR, CA, NE, UT, Northeast = CN, DE, MD, MA, NJ, NY, PE, VE.

The quality of the hard red winter crop has been above average the past few years but this year's crop deteriorated considerably. Harvest delays from excessive rainfall and cool temperatures downgraded the crop. Protein was close to the 10-year average, but down nearly 2 percentage points from last year. The fungus disease "wheat scab" affected some HRW areas but less than 3.5 percent of such production was affected. Hard red spring quality was one of the best in recent years. The quality of the soft red, white and durum wheat crops was generally good.

Exports Expected To Be Large, But Less Than Last Season

At last year's Outlook Conference we were very bullish on 1981/82 marketing year prospects, even suggesting they might reach 2.0 billion bushels. Our optimism was clouded somewhat by of a number of factors --the continuing downturn in the world economy, the strengthening of the U.S. dollar in world markets, better than expected world production and political unrest. Record U.S. exports were still attained at nearly 1.8 billion bushels. Many of the same factors continue to plague the world today. U.S. exports of wheat for the 1982/83 season are presently estimated at 1.65 billion bushels, down principally because of reduced exports from the U.S. to the Soviet Union and intensified competition from other exporting nations for our markets. At this time, the U.S. share of overseas wheat markets is expected to dip slightly below last season's high of 48 percent. Export commitments to date are just over half of the season's projected volume. This compares to about two-thirds of final sales a year ago. Therefore, in order to achieve our current export estimate, average loadings for the remainder of the year need to increase by about 2.5 million bushels weekly. This is close to the average weekly pace that established last year's record shipments. Whether our current 1.65 billion bushel estimate is reached depends heavily on the Soviet Union.

President Reagan announced on October 15, 1982, that a total of 23 million metric tons of grain from the U.S. would be made available to the U.S.S.R. during the seventh year of the U.S.-U.S.S.R. grain agreement. The same assurances of reliable delivery would be extended to purchases above the 8 million metric tons, if the U.S.S.R. contracted for the additional tonnage during the month of November with shipment within 180 days from date of the contract. Soviet purchasing during the month of November has been slow.

Also, in an effort to establish a more competitive position in the world markets and to generate additional export sales, USDA announced a 3-year "Blended Credit" export enhancement program in late October. This program adds \$500 million in fiscal 1983 to existing Commodity Credit Corporation (CCC) export credit sales program. A portion of this program includes interest-free direct export credit blended with commercial export financing guaranteed by the Government. The program will be targeted to developing countries, especially new customers or those re-entering the U.S. markets. Most of the \$500 million allocated to the blended credit program has been utilized, going to countries such as Morocco, Egypt, Yugoslavia, Philippines and India. The impact of this program on U.S. agricultural exports will be beneficial.

Domestic Use Little Changed From Last Year

Apparent wheat food use (mill grind less flour exports) during the first 4 months of the marketing year was up only slightly from the same period a year earlier. However, the significance of this pickup is that it reflects a recovery from the slow milling activity in the latter months of the 1981/82 marketing year. Wheat food use disappearance in 1982/83 is projected to climb back on trend to 610 million bushels. Abundant supplies of low priced wheat have stabilized bread flour prices. Also because of the large supplies miller and bakers can continue buying "hand-to-mouth", minimizing inventory carrying costs. Increased use of the grain reserve by producers could limit readily available supplies of certain wheat classes, in the second half of the season.

October's stocks confirmed the earlier forecast that wheat feeding could follow a similar pattern to last season. Apparent feed disappearance during June-September was around 175 million bushels only slightly below a year ago. This is an indication that below loan level prices at harvest encouraged wheat in feed rations, particularly low quality discounted stocks. But the final 1981/82 volume charged to the feed-residual eroded away to a more realistic amount--50 million bushels--below the June-September period. This accounting pattern could be duplicated for 1982/83 meaning that the total amount fed may be around 150 million bushels, not significantly different from last season.

Wheat Prices At 4 Year Low-Loan Volume Soars

With the 1982 bumper crop boosting supplies to a record 4.0 billion bushels--up 5 percent from last year and 21 percent above two years ago--the 1982/83 marketing year price outlook (\$3.40-\$3.50) is expected to be

the lowest since 1977/78. Farm prices during the first 5-months of the 1982/83 marketing year (June-October) have averaged \$3.34 per bushel, more than 20 cents under the national average loan rate of \$3.55 per bushel. The last time farm prices were below the loan rate during the June-October period was in 1977 when they averaged 12 cents under the loan rate. Although farm prices since 1955 have on occasion averaged below the national average loan rate during the June-October period, the differential has not been as large as this year.

With farm prices below the \$3.55 per bushel loan rate, it is obvious that the maximum deficiency payment of 50 cents per bushel will be paid to wheat producers participating in the 1982 ARP. Estimated payments of about \$500 million will be issued to farmers in December, compared to \$415 million for the 1981 crop when all producers were eligible to receive deficiency payments.

As a result of the low farm prices, loan volume from the 1982 crop is nearly 50 percent higher than last year, even though only 42 percent of the 1982 crop is eligible compared to the total crop for 1981. Total loan volume this year may approach the record set in 1958 when 610 million bushels were placed under loan. The reserve loan of \$4.00 per bushel with an annual 26.5 cent per bushel storage payment has been a major contributor to this year's increased loan volume. The following table shows by region and selected States current and projected loan activity for the 1982-crop.

	: Implied : Eligible : Production: : (Mil.Bu)	: Total Loan: : Volume As : of Nov. 10: : (Mil.Bu)	: Quantities in: : Reserve as of: : Nov. 10 : (Mil. Bu)	: Reserve: : As of %: : of Loan: : Volume	: Projected Volume : Total : Loan : (Mil. Bu)	: Reserve : (Mil.Bu)
<u>State</u>	:	:	:	:	:	:
<u>Southern Plains</u>	:	:	:	:	:	:
Colorado	: 40.1	: 14.0	: 12.8	: 91.4	: --	: --
Kansas	: 149.8	: 82.2	: 76.8	: 93.4	: --	: --
Nebraska	: 33.2	: 15.4	: 14.4	: 93.5	: --	: --
Oklahoma	: 90.6	: 51.7	: 50.2	: 97.1	: --	: --
Texas	: 63.1	: 45.6	: 45.1	: 98.9	: --	: --
Total	: 376.8	: 208.9	: 199.3	: 95.4	: 235	: 225
<u>Northern Plains</u>	:	:	:	:	:	:
Minnesota	: 56.4	: 25.3	: 19.6	: 77.4	: --	: --
Montana	: 166.0	: 29.5	: 16.1	: 54.6	: --	: --
North Dakota	: 226.5	: 72.4	: 52.6	: 72.7	: --	: --
South Dakota	: 59.3	: 27.0	: 21.9	: 81.1	: --	: --
Total	: 508.2	: 208.9	: 110.2	: 71.5	: 280	: 200
<u>Pacific Northwest</u>	:	:	:	:	:	:
Idaho	: 46.1	: 14.8	: 12.4	: 83.8	: --	: --
Oregon	: 24.5	: 5.8	: 4.5	: 77.5	: --	: --
Washington	: 66.7	: 26.4	: 23.4	: 88.6	: --	: --
Total	: 137.3	: 47.0	: 40.3	: 85.7	: 65	: 55
Selected State Total:	: 1022.3	: 410.1	: 349.8	: 85.3	: 580	: 480
U.S. Total	: 1179.6	: 436.6	: 366.0	: 83.8	: 610	: 500

How Big Will the Farmer-Owned Reserve (FOR) Become

The net size of the FOR at the end of the 1982/83 season is estimated to be 950 million bushels or larger. As of mid-November, total quantities in the FOR (1976 thru 1982 crops) exceeded 955 million bushels. The following table shows the reserve breakdown by the year and class as of 10/31/82.

Crop Year	Hard Red Spring	Durum	Soft Red Winter	Winter	White	Mixed	Total
	-----Million Bushels-----						
1976	40.3	3.2	9.9	.1	3.7	--	57.2
1977	28.2	1.0	24.6	.3	.8	--	54.9
1978	10.8	1.1	7.0	--	.6	--	19.5
1979	12.2	.6	19.1	--	2.2	--	34.1
1980	33.3	6.4	126.1	1.8	34.9	1.1	202.6
1981	63.5	33.0	79.2	14.0	30.6	1.1	221.4
1982	65.3	17.2	213.7	12.0	36.2	1.5	345.9
Total	253.6	62.4	479.7	28.2	109.0	2.7	935.6

The FOR quantities from the 1976 and 1977 crops will be reaching the five-year limit and cannot be continued under the reserve. Nearly 85 percent of the 112.1 million bushels will mature during the first three months of calendar year 1983. Loan redemption values for this grain will vary between \$2.40 and \$2.50, as this grain carried only a \$2.25 loan level. Producers will have two options--either redeem the loan amount plus interest or forfeit the loans to CCC. It seems unlikely that any of this grain will be acquired by CCC. The Secretary could allow producers holding 1976 and 1977 grain to extend their repayment date beyond maturity. If such an action is taken, producers would be required to pay interest from maturity and storage payments would cease. Also, before the end of this season (May 31, 1983), more than 50 million bushels of the 1978 and 1979 crop reserve grain will be reaching the initial 3-year maturity. These producers will have three options--(1) redeem the loan amount plus interest (2) forfeit the loans to CCC or (3) extend the reserve contract for another two years. No grain is expected to be acquired by CCC from these contracts. Most is expected to be redeemed with the balance continued under reserve for another two years. The repayment value for 1978 and 1979 reserve contracts will vary from \$2.60 to \$2.85 per bushel (1978 crop loan was \$2.35; 1979-\$2.50). No other reserve grain matures before May 31, 1982.

1982/83 Carryover Near Record

The highest level of carryover wheat stocks (1502 million bushels) in the U.S. occurred as of May 31, 1961. Stocks at the end of the 1982/83 season are now estimated at 1461 million bushels and could exceed the 1961 record if export projections and food residual estimates are not realized. The breakdown of the 1982/83 carryover by wheat class follows:

	Hard Red Winter	Hard Red Spring	Soft Red Winter	Durum	White	Total
Total Stocks	692	441	58	140	130	1461
Est. FOR Stocks	485	245	30	75	115	950
Est. CCC Inventory	126	45	8	2	4	185
Implied Free Stocks	81	151	20	63	11	326

Based on expected levels of FOR and CCC stocks on May 31, 1983, it would suggest that the "free stocks" position of some classes, such as white, might become quite tight. This situation is presently being reflected in the white wheat market, where prices are nearly equal to year earlier levels while prices of other classes are ranging from 10 to 25 percent below year earlier levels.

Movement into the FOR has maintained a brisk pace and, if this continues, levels shown above could become larger, further tightening the "free stocks" of other classes of wheat. Even though some tightness may occur, little price strength is expected.

1982 Acreage Reduction Program (ARP)

With stocks building to excessive levels, an acreage reduction program was implemented for the 1982 crop of wheat. The major provisions of the program were:

- ARP percentage - 15% from an acreage base or 17.65 percent of acreage for harvest.
- Acreage Base - Established using higher of 1981 or average of 1980 and 1981 acreage planted for harvest. Adjustments for crop rotations and other abnormal factors were authorized.
- Target Price - \$4.05 per bushel.
- Loan Price - \$3.55 per bushel.
- No offsetting or cross compliance.
- Farmer-Owned Reserve (FOR) Provisions:
 - a) Entry Price - \$4.00 per bushel.
 - b) Storage Payment - 26.5 cents per bushel per year (paid in advance).
 - c) Interest charges - Interest at prevailing CCC rate charged first year of contract, waived second and third years.
 - d) Trigger "Release" Price - \$4.65 per bushel.
 - e) Entry into FOR - Direct.
 - f) Early Redemption - Penalty is equal to one-half of the current CCC interest rate from date contract is approved. In addition, standard redemption values and all storage payments paid must be repaid.

Participation in the 1982 ARP varied by region and is shown in the following table:

	: Total	: Enrolled	: Complying	: Acreage for	: Percent	Ac. for
	: Acreage	: Acreage	: Acreage	: Harvest on	: of Base	Harvest
	: Base	: Base	: Base	: Complying	: Complying	As % of
	:	:	:	: Farms	:	Complying
	:	:	:	:	:	Base
	:-----Million Acres-----			:-----Percent-----		
Pacific NW	: 6.3	5.9	3.4	2.6	54.6	75.1
S. Plains	: 37.1	33.6	16.6	12.7	44.8	76.2
N. Plains	: 27.9	27.1	19.6	15.2	70.4	77.3
Southeast	: 7.7	3.1	1.3	.9	17.0	68.0
Corn Belt	: 9.2	5.7	2.0	1.3	22.3	64.0
Southwest	: 1.9	1.2	.6	.3	30.9	60.1
Northwest	: .6	.3	.1	1/	20.6	64.1
U.S. Total	: 90.7	76.9	43.6	33.0	48.2	75.5

1/ 78 thousand acres.

Program participation was not as high as hoped, generally because of the late announcement of the program (January 29, 1982) and the favorable growing conditions this spring.

Outlook for 1983 Wheat Crop

The 1983/84 season will be the second successive year that wheat growers will have to decide about participating in an ARP. Their decisions on what and how much to plant will be based on market conditions and market expectations for wheat and competing crops, the weather, and the benefits offered by the 1983 program. Early indications of winter wheat plantings would suggest that there may be little change from last year's 66.3 million acres. A higher level of participation is expected under the 1983 program. Therefore, if winter wheat plantings don't decline much, producers will need to make their participation decision next spring. If crop conditions are favorable through compliance dates, overall participation under the 1983 wheat program could be reduced below expectations. Farmers are reluctant to destroy growing crops especially, good ones. The size of the 1983-crop depends heavily on future weather developments and 1983 program participation. However, the prospects for a large crop are highly probable because of the widely disbursed production areas in the U.S. Evidence to support this contention can be drawn from experiences of the recent past. For instance, the major drought in the Northern Plains in 1980 and the massive freeze in the Central Plains in 1981, but in both years the total U.S. crop set new records. With the exception of the 1980 wheat crop, yields in the U.S. have risen every year since the 1976 crop. In 1980, yields were down less than a bushel per acre from the previous years record yield.

A lower than anticipated level of participation in the 1982 ARP, declining exports and record production caused carryover levels to increase further prompting the Secretary to announce an ARP again for the 1983 crop. The initial program announcement was made July 14, 1982, but this announcement was superseded by Congressional action--the Omnibus Budget Reconciliation Act of 1982. This legislation mandated a paid land diversion program coupled with an ARP. Major provisions of the currently announced program are:

- Acreage Adjustment Percentage-15%-ARP plus 5% paid land diversion (20% ARP announced on July 14, 1982.
- Diversion Payment Rate-\$2.70 per bushel.
- Acreage Bases-Shall be same as established for 1982 program purposes. Crop rotation and other adjustments continue to be authorized.
- Target Price-\$4.30 per bushel.
- Loan Price-\$3.65 per bushel.
- No offsetting or cross compliance requirements.
- Sign-up period-October 1, 1982, through March 31, 1983.
- Advance Payments-Payments equal to one half of the estimated deficiency rate (32.5 cents per bushel) and diversion rate (\$1.35 per bushel) are available to producers at signup.
- Farmer-Owned Reserve Provisions-to be announced later.

The supply situation has changed materially since the 1983 wheat program was announced. Pressure has been mounting for additional program changes to increase the effectiveness of the adjustment effort. A number of proposals are under review.

Provisions of the FOR are also under review and this program will be announced later. The size of the FOR is becoming a concern and adjustments in the program are needed.

Participation in the 1982 ARP was 48 percent of the base. 1983 levels of participation are estimated at 60 to 65 percent of the total acreage bases. Estimates by region are:

<u>Area</u>	1982 Compliance Level	Estimated 1983 Compliance Level
	-----Percent-----	
PNW	54.5	50-60
S. Plains	44.8	60-70
N. Plains	70.4	70-80
Southeast	17.0	25-35
Corn Belt	22.3	25-35
Southwest	30.9	30-40
Northwest	20.6	20-25
U.S. Total	48.2	60-65

U.S. Rice Outlook:

Acreage Production and Yields Down but Total Supply at About the Same as Last Year's Record

Rice production in 1982 based on November 1 estimate will be 152.8 million hundredweight, down almost 18 percent from last year's record crop of 185.4 million hundredweights. This production is based on harvested acreage of 3.29 million acres, down 13 percent from last years record harvested acreage of 3.80 million acres and a yield of 4,650 pounds per acre, also representing a decline of almost 5 percent from last year's record yield of 4,873 pounds per acre. All producing States except Missouri reduced plantings. Missouri increased acreage by 4 percent. The major reduction were in three States. Arkansas reduced acres by 14 percent to 1.35 million acres; Mississippi reduced by 22 percent to 265,000 acres; and Texas reduced by 21 percent to 460,000 acres. Yields are below 1981 in Arkansas, California and Mississippi--higher in Louisiana, Missouri and Texas. The reduction in harvested acreage and production is attributed, principally to producers participation in the 15 percent acreage reduction program announced by Secretary Block on January 29. Producers have certified a total of 3.1 million acres--about 77.9 percent of the total base acreage. Acres planted for harvest in complying farms total about 2.4 million acres. The 1982 acreage compliance report for the major rice-producing States is as follows:

	<u>Total Base Acres</u>	<u>Base Acres Enrolled</u>	<u>Base Acres Complying</u>	<u>Acres Planted on Complying Farms</u>	<u>Complying as a Pct. of Total Base</u>
Ark.	1,550,814.8	1,311,829.4	1,215,731.1	948,964.8	78.39
Calif.	690,020.1	589,444.1	438,511.6	340,923.3	72.00
La.	715,832.1	667,725.1	563,637.7	445,191.1	78.74
Miss.	358,948.7	315,223.8	278,447.7	200,323.2	77.57
Mo.	88,251.4	79,047.8	58,267.6	45,646.7	66.02
Tex.	632,008.0	559,646.7	529,626.8	408,910.3	83.80
USA <u>1/</u>	3,969,460.3	3,535,932.0	3,092,526.5	2,393,573.0	77.91

1/ Includes Minor States.

However, given the large beginning stocks of 48.9 million hundredweights of which an estimated 17.6 million hundredweights are CCC-owned and when combined with production of 152.8 million hundredweight plus imports of about 400,000 hundredweights total supply is estimated at 202.1 million hundredweights compared to last year's record total supply of 202.2 million hundredweights.

Export Demand Reduced for 1982/83

Rice exports for 1982/83 are currently projected at 82.7 million hundredweight or about (2.7 million tons, milled basis) unchanged from last year. The world rice harvest is projected to be 3 percent smaller than the record

1981/82 crop of 276 million tons (milled basis). However given large stocks in South Korea, Japan, Taiwan, Burma, Thailand and Indonesia, the U.S. will face keen competition in the world markets.

Domestic Use Increasing

Domestic food use and industrial use in 1982/83 are projected to reach 62.5 million hundredweights, or an increase of about 5 percent from last year. The increase indicates the continued expansion in food use and also the use of rice by brewers.

Ending Rice Stocks High and Virtually Unchanged from Beginning Stocks

Ending stocks are projected to be 46.9 million hundredweight, down only slightly from the beginning stocks of 48.9 million hundredweights. Of these, CCC-owned inventory is projected to be about 22 million hundredweights. Farm prices for rough rice are currently projected to range from \$7.50 to \$8.25 per hundredweight. The five-month (Aug.-Dec.) average price received by farmers is projected to be below the national average loan and purchase rate of \$8.14 per hundredweight. As a result, deficiency payments will be made to eligible producers at the rate \$2.71 per hundredweight (target price of \$10.85 less the loan rate of \$8.14).

Rice Outlook Workshop

A separate workshop on the rice situation and outlook is scheduled to be held December 14 in Little Rock, Arkansas. The location is the Executive Inn, 707 Interstate 30, between 8:30 am to 3:30 pm.

1983-Crop Rice Program

The 1983-crop rice program must be announced no later than January 31, 1983. The period for public comment on the program ended November 26, 1982. We would expect an announcement during December.

ECONOMIC IMPLICATION OF A REDUCED ACREAGE PROGRAM - PAID DIVERSION PROGRAM FOR THE WHEAT INDUSTRY

Abner Womack

INTRODUCTION

The U.S. farmer played catch-up to a growing world demand in the 1970s. Dwindling stocks were not replenished until the latter part of the decade. In fact, acreage restriction programs were not necessary until the latter part of the decade when a set-aside program with a paid diversion option was introduced in 1978/79 and 1979/80. This momentum was quickly reversed by a drought in the summer of 1980. Stocks evaporated to record low levels with corresponding expectations of short supplies lasting until the mid 1980s. In fact, many outlook statements, including mine, projected a most likely scenario that maintained rather high grain prices for 1981/82, 1982/83, and 1983/84. A random throw of the weather die resulted in a record crop in the summer of 1981 and 1982. At the same time, the U.S. economy and other world economies had entered a recession with corresponding implications for livestock products. This combined effect of strong supplies with slack domestic and foreign demand has returned U.S. carryover reserves to record high levels. In fact, the reserve picture indicates a situation that is almost a reflection of the high supply reserve situation of the early 1960s. As a result of these events, a reduced acreage program was implemented for the 1982/83 feedgrain and wheat industries. Unlike previous programs for reducing acreage, this particular strategy departed rather markedly with regard to economic incentives offered for acreage reduction. Farmers agreeing to reduce wheat by 15 percent and feedgrains by 10

percent were offered normal loan and target price protection. Previous programs utilized up-front diversion payments or higher target prices. The most attractive component of the 1982/83 set-aside program was the reserve entry price associated with placing grain into the reserve.

This paper examines the implications of the 1982/83 Reduced Acreage Program and the recently announced Reduced Acreage Program and Paid Diversion for the 1983/84 crop year. This analysis will be conducted, first, via a review of the management of a reserve program and, second, by economic implications of the current environment encased in this management framework.

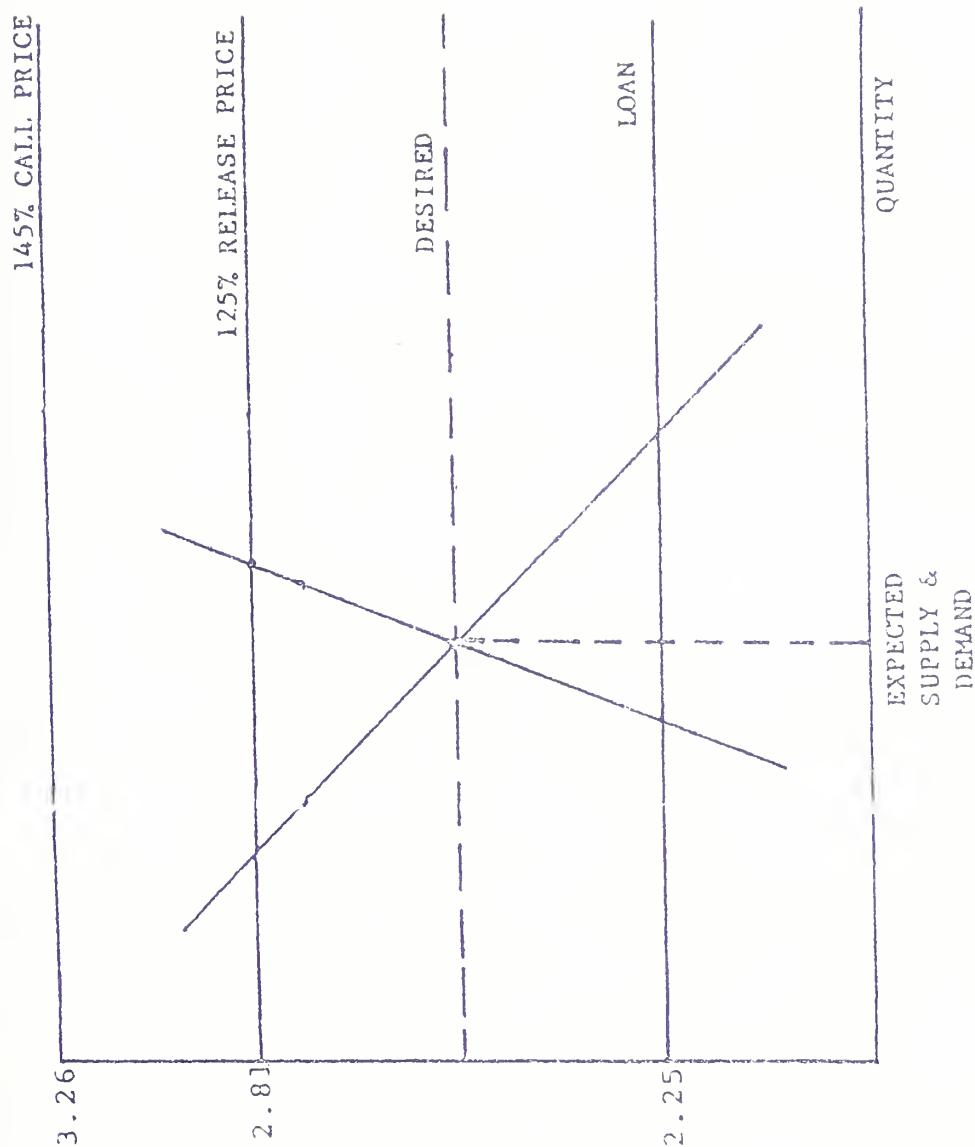
FARM PROGRAM REVIEW

The current farm program is designed around the notion of a buffer stock reserve program. Reasons given for adoption include:

- Provide adequate working stocks.
- Reduce the danger of food shortages at home and abroad.
- Help stabilize farmers' incomes and the general economy.
- Increase the acreage level of farm price and farm income.
- Assist growth in underdeveloped areas of the world.

Operation of this type of program is depicted in Figure 2. A balanced corn industry is represented by the expected intersection of supply and demand at an equilibrium price between the loan rate and release price. Several levers are at the disposal of the USDA to drive the industry in this direction. For example, supplies can be manipulated by various reduced acreage program incentives that usually include loan protection, target and diversion payments. This strategy is used to guide the industry from one year to the next. A within-year strategy

Figure 1. 1980/81 No Set-Aside: Corn



ACREAGE ADJUSTMENT INCENTIVE		FARMER-HELD RESERVE & CCC	
LOAN	2.25 dol/bu.	PROGRAM LEVEL	600 mil./bu.
TARGET	2.35 " "	PAYMENT	26 1/2 bu.
DIVERSION	" "	INTEREST	0 %
NO SET ASIDE		RELEASE PRICE	125 %
		CALL PRICE	145 %

involves manipulation of the farmer-held and CCC reserves. Reserve entry prices, storage payments, and interest rates are the incentives used to increase reserve participation. Relaxation of these incentives at higher release prices encourages the flow of these reserves back on the market.

This buffer stock program implicitly contained three components that operate simultaneously to maintain this balanced equilibrium. These include (1) a price range objective (loan to release), (2) a desired operating stock level that maintains the industry in this band, and (3) a large percent of the time. A rule that changes any one of the three objectives automatically alters the other two. For example, if the desired price band is widened or spread, less reserves will be required on average to maintain the same probability objective. Likewise, if the probability of remaining within the interval is lowered, but the price interval remains fixed, then the average reserve objective declines.

Research indicates that a strategy that alters these objectives to the extent that the desired forward price is different from the expected, center line price will produce less social welfare. This implies that USDA program managers must be familiar with this program, its operation, and have balanced objectives in mind when acreage reserves incentives are placed in motion. Specifically, in what direction is the industry to be driven?

To take this issue one step further, suppose a management strategy utilizes the center line price objective. This option gives an equal change of an equilibrium price at the loan level or the release level. However, if a strategy is utilized to maintain loan rate prices as a forward price objective, then minimal acreage would be diverted from production and reserves held at unusually high levels. On the opposite side, if a forward price objective is to maintain up-side or release level prices, then unusually large amounts of land will have to be

moved from production or large reserve accumulation to remove necessary grain from the marketplace. This latter strategy seems to be most closely associated with the Administration objective of an acreage reduction program that contains considerable economic incentives to stock building.

Tables I, II and III contain stock objectives supported by the USDA in operation of the 1977 program. Table I implies a total grain objective of 71.6 million metric tons, 30.6 million wheat, and 41 million feedgrains. Table II implies that these total reserves would be equally divided between commercial and government controlled categories. Tables III and IV indicate that these reserve objectives were associated with long-term average of U.S. reserves relative to total world consumption.

A problem with the current program is that no clear statements or reserve objectives have been announced. Rather, a strategy has been defined such that reserves will build to the point that commercial inventories evaporate resulting in release prices in the market.

Table I
USDA Total Grain Stock Objectives, 1977

Crop	% of World Consumption	Million Metric Tons (mmt)	Ending U.S. Stock in 1978/79 (mmt)
Wheat	7.5	30.6	30.7
Feedgrains	5.7	41.0	41.9

Table II
USDA Grain Reserve Objective, 1977

Crop	Farmer Owned	CCC Owned	Commercial	Total
		----- mmt -----		
Wheat	9	6	15	30
Feedgrains	15	4	22	41

Table III
World Consumption & U.S. Ending Stocks of Coarse Grains

Year	Consumption World	U.S. Ending Stocks	5.7% of World Consumption	U.S. Ending Stock/World Consumption
	----- million metric tons -----			%
1975/76	646	17	37	2.7
1976/77	683	30	39	4.4
1977/78	694	41	40	6.0
1978/79	742	46	42	6.2
1979/80	727	54	41	7.4
1980/81	746	24	42	3.3
Avg. 77/80	727	41	41	5.7
Avg. 70/76	648	28	37	4.3
Avg. 75/80	706	35	40	5.0

Table IV
World Consumption & U.S Ending Stocks of Wheat

Year	Consumption World	U.S. Ending Stocks	7.5% of World Consumption	U.S. Ending Stock/World Consumption
	----- million metric tons -----			%
1975/76	352	18	26	5.1
1976/77	378	30	28	8.0
1977/78	400	32	30	8.0
1978/79	430	25	32	5.9
1979/80	442	24	33	5.5
1980/81	447	25	33	5.6
Avg. 77/80	430	26	32	6.2
Avg. 70/76	361	19	27	5.3
Avg. 75/80	408	26	30	6.35

PROGRAM EQUILIBRIUMS - GRAPHICAL ANALYSIS

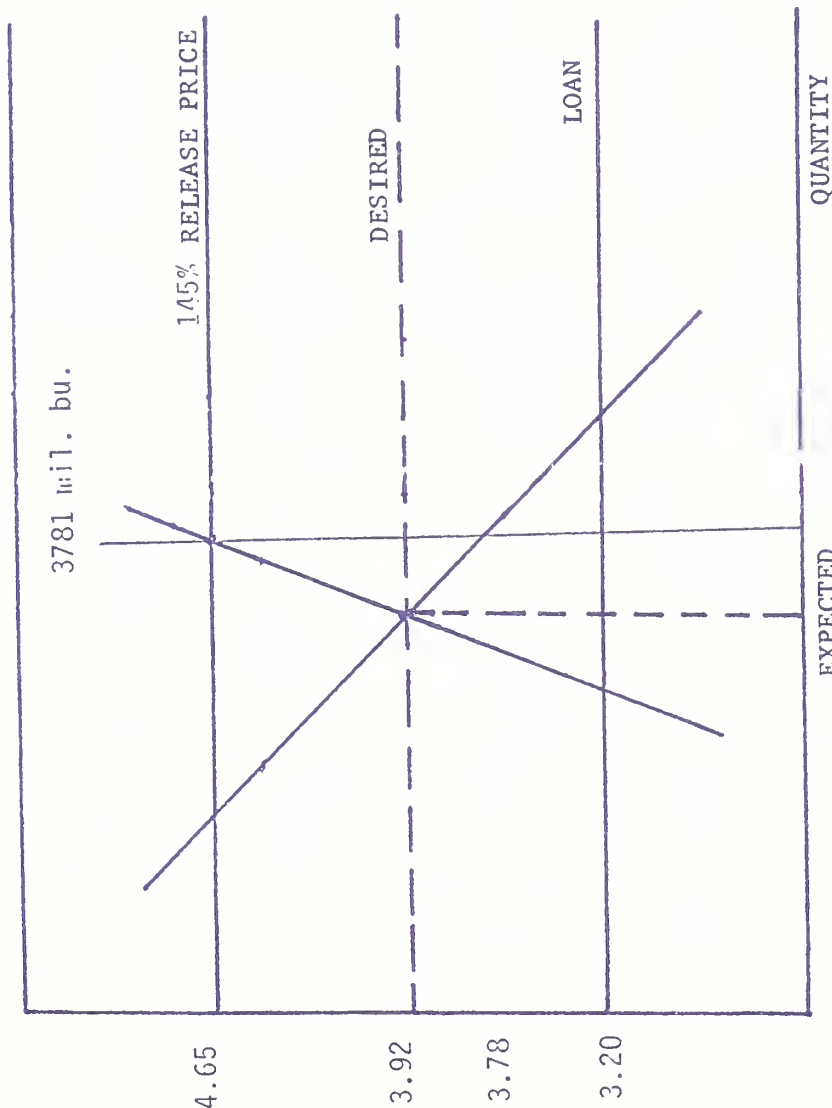
Market price equilibriums for the wheat sector are presented in this section, around the reserve program guidelines for years 1981/82 through 1983/84. Figure 1 indicates the free market trading band for the 1981/82 program, with an expected equilibrium price of \$3.78, made by the University of Missouri modeling staff in March 1982. Latest USDA estimates place this number at \$3.60.

This equilibrium is within program guidelines with reserve very near. The very strong increase in acreage, a no-set-aside year, with good yields were offset by a fairly strong export market. Total reserve did build from around 980 million to 1153 million and season average price declined from \$3.91 to \$3.60.

Given this rather favorable outlook, a 15 percent reduced acreage program was announced in January 1982. Figure 2 reflects estimates made at the University of Missouri in March around the program guidelines. Our projections contained a most likely planted acreage level of 86 million acres. Low participation was expected because of the late announcement with winter wheat already planted, utilization of the farmer-held reserve as a program incentive, and the strong shift toward wheat production in the soft wheat areas. Low participation was, in our opinion, directly associated with the expectation that program participants would place wheat in the reserve at harvest, resulting in additional strength in market prices. The higher yield in the soft wheat area has created a regional advantage to these producers relative to other hard wheat regions.

Although acreage was slightly different from this projection, these three scenarios demonstrate that the 15 percent Reduced Acreage Program was not attractive enough to prevent low-side price pressure and stock buildup. In fact,

FIGURE 1. WHEAT 1981/82



ACREAGE ADJUSTMENT INCENTIVE	
LOAN	\$3.20 dol/bu.
TARGET	\$3.81 " "
DIVERSION	- - " "
	- - SET ASIDE

FARMER-HELD RESERVE	
PROGRAM LEVEL	mil./bu.
PAYMENT	\$.265 bu.
INTEREST	Mkt rate %
RELEASE PRICE	145 %

Reserve loan \$3.50

AREA	MILLION ACRES
PLANTED	88.9
HARVESTED	80.9
YIELD/HARV	34.5
BEG STOCKS	988
PRODUCTION	2791
IMPORTS	2
SUPPLY TOTAL	3781 (3771)
FEED	135
FOOD, SEED & IND.	732
DOMESTIC TOTAL	867 (849)
EXPORTS	1750 (1773)
USE TOTAL	2617
ENDINGS STOCKS	1164 (1153)
FARMER-OWNED	545 (562)
CCC	185 (187)
Free	434 (404)
AVG. FARM PRICE	3.78 (3.60)

Δ FHR = + 202 mil. bu.

Total Reserves 31.4 MMT
FHR 15.3 MMT
CCC 5.1 MMT

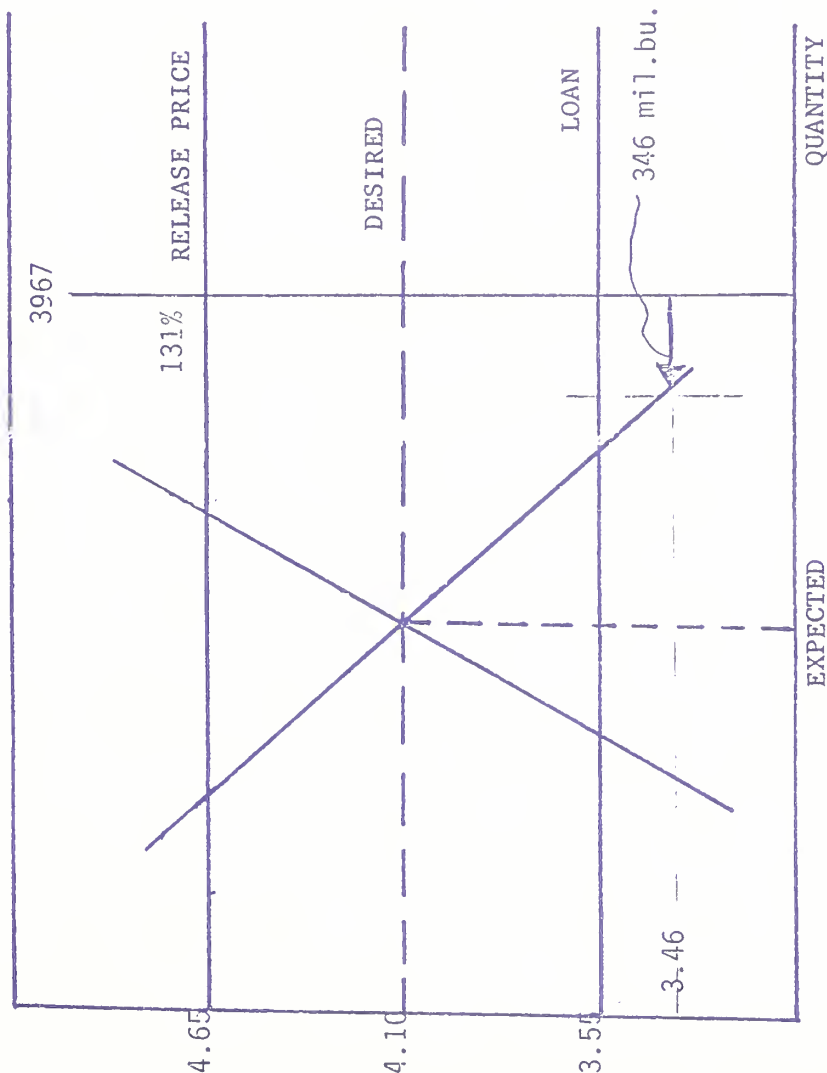
FIGURE 2.

WHEAT 1982/83 REDUCED ACREAGE PROGRAM



Δ FHR = 135 mil. bu.
 Δ CCC = 50 mil. bu.
 Total Reserves [32, 33, 35.5]

FIGURE 3 WHEAT 1982/83 RAP



ACREAGE ADJUSTMENT INCENTIVE		FARMER-HELD RESERVE	
LOAN	3.55	PROGRAM LEVEL	-- mil. bu.
TARGET	4.05	PAYMENT	26½ ¢/bu.
DIVERSION	"	INTEREST	Mkt Rate%
15% RAP	"	RELEASE PRICE	131 % of Loan
		Reserve Loan	\$4.00

AREA	MILLION ACRES
PLANTED	87.2
HARVESTED	79.0
YIELD/HARV	35.6
BEG STOCK	1153
PRODUCTION	2812
IMPORTS	2
SUPPLY TOTAL	3967
FOOD	620
SEED	255
FEED & RESID.	875
DOMESTIC TOTAL	
EXPORTS	1650
USE TOTAL	2525
ENDING STOCKS	1442
FARMER-OWNED	925
CCC	187
Free	330
AVG. FARM PRICE	3.46

Δ FHR = 363 mil. bu.
 Δ CCC = --
 Total Reserves = 39.2 MMT
 FHR = 22.5 MMT
 CCC = 5.1 MMT

this projection indicated at least two changes out of three that price would be at or near the loan rate.

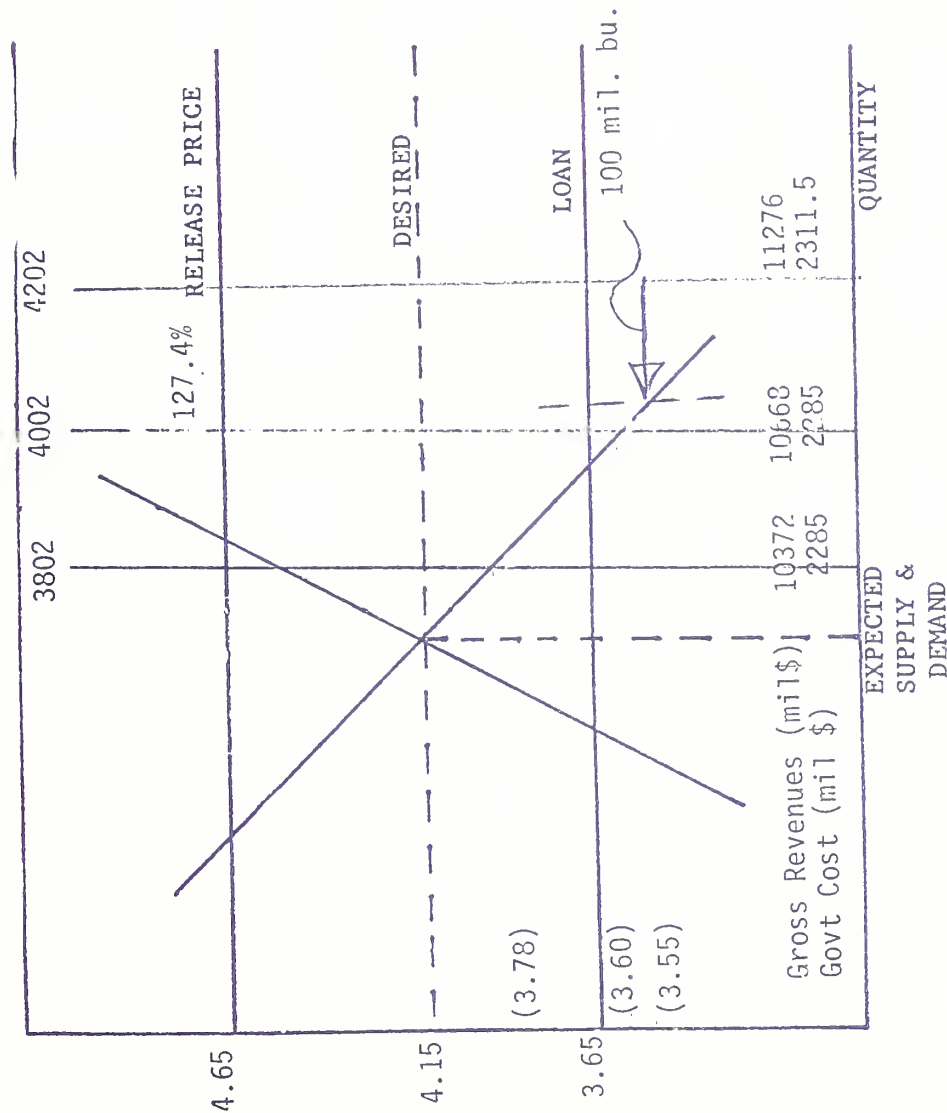
Figure 3 reflects current estimates indicating that acreage was actually higher than first projected. This equilibrium suggests a market price below the loan with the potential of increasing farmer-held reserve to 925 million bushels. Also, this equilibrium indicates the potential for substantial price increases if demand should start eroding away the free category of 330 million bushels. This is an interesting situation, since wheat price could make a substantial jump near the end of the marketing year. Grain would not be available to the market until the \$4.20 level is reached up previous reserve contracts. If this should occur before compliance time in the 1983/84 program, it will certainly erode away potential program participants.

Figure 4 represents a suggested modification to the program. These suggestions were made during the public comment request period by the Secretary of Agriculture. The objective of this particular modification was to examine the implications of a Reduced Acreage Program strengthened by a paid diversion. In this case, a 40-cent diversion payment was also made on the reduced planted area of 85 percent. Our projections implied that the wheat industry would be more equitably aligned under a planted area of 81 million acres. Reserves were not projected to increase, however, government cost was projected to increase from \$200 to \$300 million over the RAP options and cross revenues were projected to be about 500 million greater.

Although this option is "water under the bridge," had it been implemented and in fact acreage was in the 81 million acre range, then approximately 220 million bushels if wheat would not have entered the market, or more likely the government reserve programs.

Figure 5 reflects current expectation associated with the 1983/84 reduced acreage-paid diversion program. This outlook is based on a participation rate of 60 percent, however, it is very likely that this level of participation will take place in the hard red wheat or base wheat states. And expected strength in the market price will continue to stimulate wheat acreage production outside the program, especially in the southeast and sunbelt regions. If this projection is on target, and given the current softness in the import market, it is very likely that market prices will remain near the loan level with the potential for stock building in 1983/84. The poor crop scenario was conducted in conjunction with a poor corn and soybean crop. The top-side price of \$3.78 is not high enough to release reserves. If this outlook is on track, these results suggest that the wheat industry will very likely continue to be under pressure with excessive reserves and prices near the bottom of the range.

FIGURE 5 WHEAT 1983/84 RAP - PD



ACREAGE ADJUSTMENT INCENTIVE
LOAN \$3.65
TARGET \$4.30
DIVERSION \$2.70 on 5%
RAD 15%

FARMER-HELD RESERVE
PROGRAM LEVEL 26 1/2 mil. bu.
PAYMENT 26 1/2 c/bu.
INTEREST Mkt Rate %
RELEASE PRICE N.A.
RESERVE LOAN N.A.

AREA	MILLION ACRES
PLANTED	83.5
HARVESTED	73.5
YIELD/HARV	32.1
BEG STOCKS	1442
PRODUCTION	2358
IMPORTS	2
TOTAL SUPPLY	3802
FOOD	655
SEED	170
FEED & RESID.	200
DOMESTIC TOTAL	825
EXPORTS	1600
USE TOTAL	2460
ENDING STOCKS	1342
FARMER-OWNED	925
CCC	187
Free	330
AVG. FARM PRICE	3.78
	3.60

4FHR = 0 mil. bu.
4CCC = 0 mil. bu.

Total Reserves = [36.5, 39.2, 42.0]

Table V

Comparison of Returns Across Corn, Soybeans
and Wheat

- 1982/83 Reduced Acreage Program (RAP)
- 1982/83 Reduced Acreage Program and Paid Diversion

	Reduced Acreage				Reduced Acreage/Paid Diversion			
	Farm	Gross	Govt	Farmer	Farm	Gross	Govt	Farmer
	Price	Rev.	Cost	Held	Price	Rev.	Cost	Held
	\$/bu	mil\$	mil\$	Res.	\$/bu	mil\$	mil\$	Res.
				milbu				milbu
----- Good Crop -----								
Corn	2.40	19202	1295	1450	2.55	20360	1634	1150
Soybeans	5.26	11977			5.60	12674		
Wheat	3.44	9886	1156	675	3.60	10600	1441	545
		<u>41065</u>	<u>2451</u>	<u>2125</u>		<u>43634</u>	<u>3075</u>	<u>1695</u>
----- Normal Crop -----								
Corn	2.48	18838	598	1250	2.91	21372	745	975
Soybeans	6.00	12751			6.49	13793		
Wheat	3.52	9564	712	675	3.94	9682	914	545
		<u>41153</u>	<u>1310</u>	<u>1925</u>		<u>44847</u>	<u>1659</u>	<u>1520</u>
----- Poor Crop -----								
Corn	2.86	20673	304	1150	3.14	21939	706	675
Soybeans	7.07	13952			7.20	14208		
Wheat	3.82	9532	517	675	4.19	10118	743	545
		<u>44157</u>	<u>821</u>	<u>1825</u>		<u>46265</u>	<u>1449</u>	<u>1220</u>

WHAT IS THE BUDGET EXPOSURE?

- Each 100 mil. bushels kept in FHR of wheat

1st year storage payment	\$ 26.5	mil
2nd year storage payment	26.5	mil
Deferred interest 14.5% * \$4.00	58.0	mil
3rd year storage payment	26.5	mil
Deferred interest 14.5% * \$4.00	<u>58.0</u>	mil
 TOTAL	 \$195.5	 mil
 P.V. =	 \$ 161	 mil

- Each 100 mil. bushels kept in FHR of corn

1st year storage payment	\$ 26.5	mil
2nd year storage payment	26.5	mil
Deferred interest 14.5% * \$2.90	- 42.1	mil
3rd year storage payment	26.5	mil
Deferred interest 14.5% * \$2.90	<u>42.1</u>	mil
 TOTAL	 \$163.7	 mil
 P.V. =	 \$ 135	 mil

To begin a realignment of the wheat industry will require a planted area base of 78 million acres. Under this scenario, 4,002 million bushels becomes the high side supply; 3,802 the normal; and 3,602 low or poor crop supply. The low supply scenario offers the possibility of prices between the mid-range and the release price of \$4.65, Figure 5. A season average in this area would very likely trigger the release of grain during the 1983/84 crop year, up to 200 million bushels.

The current projection of 83.5 million acres is based on 60 percent participation yielding the following estimated government costs and acreage levels.

Base Acreage	90.7	million acres
Participation	$\times \frac{60}{100}$	%
	<u>54.42</u>	million acres in program
	54.42	program acres (millions)
	$\times \frac{20}{100}$	%
	<u>10.88</u>	million acres set-aside and diverted
	54.42	program acres (millions)
	<u>-10.88</u>	set-aside and diverted
	<u>43.64</u>	planted program acres
	54.42	program acres (millions)
	$\times \frac{5}{100}$	%
	<u>2.72</u>	diverted acres
DEFICIENCY PAYMENT		
$43.64 \times 34 \times .65 =$	\$ 964	million
DIVERSION PAYMENT		
$2.72 \times 34 \times 2.70 =$	250	million
STORAGE PAYMENT		
$925 \times .265 =$	245	million
DEFERRED INTEREST (2nd Yr.)		
$[(3.50 + 4.00) \times .5] \times .145 \times 925$	502	million
	(440)	P.V.

DEFERRED INTEREST (3rd Yr.)		
$[(3.50 + 4.00) * .5] * .145 * 925$	502	million
	(386)	P.V.
TOTAL CURRENT COST =	2285	million

If my projection of 83.5 million acres is on target for the coming year under the 15% RAP and 5% Paid Diversion, then 78 million planted acres would require an additional 5.5 million acres. Three numbers in the current budget should be examined to ascertain short-term and long-term budget commitments with regard to these additional expenses of approximately \$100 per acre or an estimated additional expenditure of \$550 million.

According to estimates contained in Figure 5, the most likely scenario under 78 million planted acres would be equivalent to the first column, implying no reduction in either farmer-held reserve or current government costs, since farmer-held reserves remain at 925 million bushels and a 3.78 market price would require the full deficiency payment of 65¢ per bushel. In fact, government cost under this scenario would be higher by at least 550 million for the additional acreage. Participation rate would increase if an additional 5 to 10 percent voluntary diversion component were added. This would imply an additional 500 to 800 million in near-term government cost to around \$3000 million for the 1983/84 wheat program.

Will this short-term investment pay off in the longer term? My calculations suggest that an objective of 425 million bushels in farmer reserve and 150 in CCC reserves would be reasonable for the current program price range, between 3.65 and 4.65, for a total reserve objective of 1300 million bushels. This implies an excess of about 537 million bushels. Annual costs on these additional reserves will be approximately:

STORAGE COST

$$537 * .265 =$$

\$ 142 million

DEFERRED INTEREST

$$537 * .145 * \$3.75 =$$

$$\frac{292}{\$434} \text{ million}$$

- Also, as the market price moves back into the mid-range, the government exposure associated with the deficiency payment is substantially reduced.
- If this action is taken across all major crops, then substitution pressure will be substantially reduced, creating price strength in the longer term.
- A total reserve objective for corn is, according to my estimation, about 1400 million bushels with 600 free, 600 farmer reserves, and 200 in CCC reserves. This would imply about 1200 million-excess in farmer reserve by the end of 1982/83. Combining this estimated excess levels for 1982/83 implies:

FARMER HELD RESERVES CORN	2200	million bu.
PROGRAM OBJECTIVE LEVEL	<u>-600</u>	million bu.
	1200	excess

CCC RESERVE CORN	450	million bu.
PROGRAM OBJECTIVE LEVEL	<u>-200</u>	million bu.
	250	excess

FARMER HELD RESERVES WHEAT	925	million bu.
PROGRAM OBJECTIVE LEVEL	<u>-425</u>	million bu.
	500	excess

CCC RESERVES WHEAT	187	million bu.
PROGRAM OBJECTIVE LEVEL	<u>-150</u>	million bu.
	37	excess

Applying present value for three year program cost of reserves through the full three years implies excess cost of:

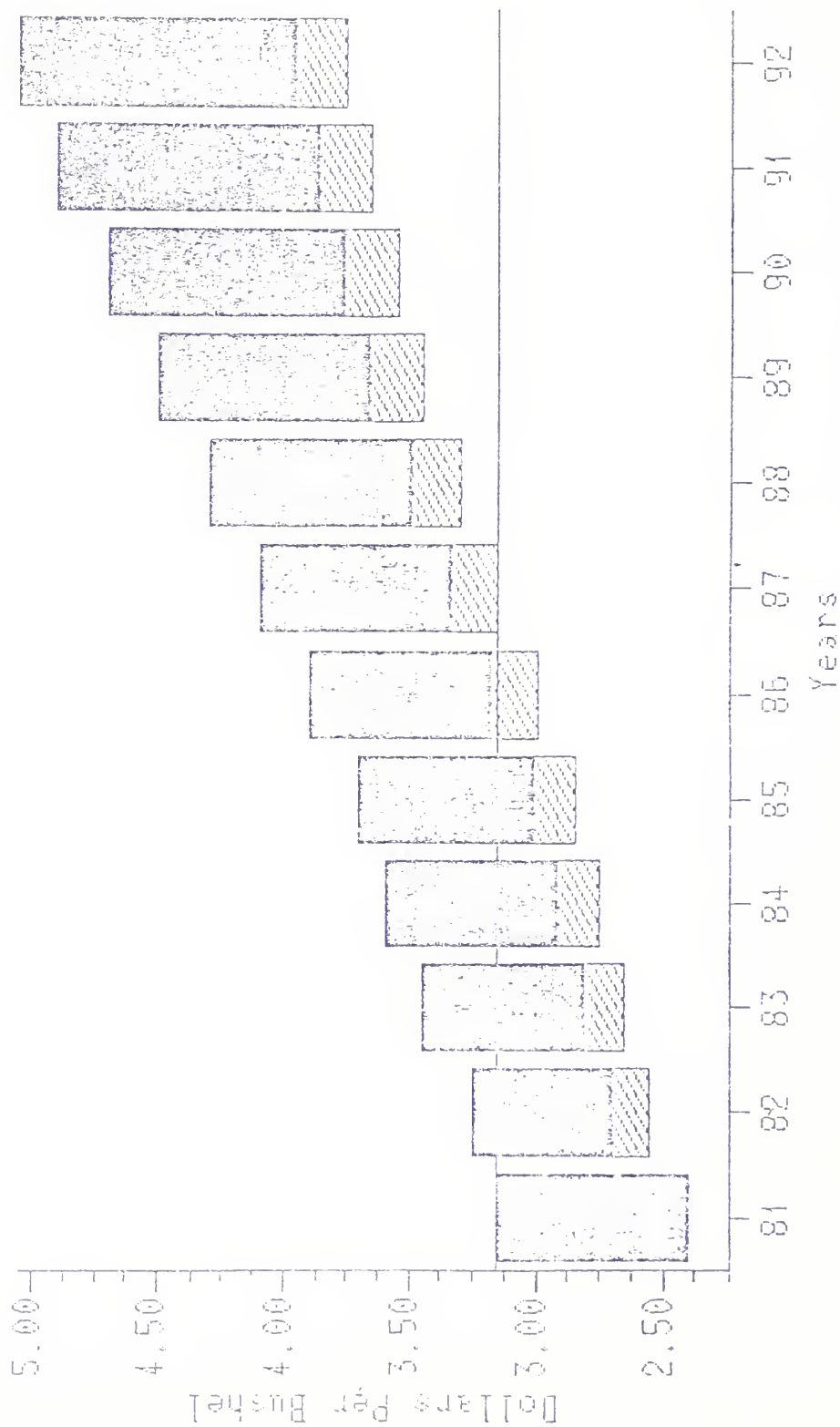
$(1200 * 161)/100 =$	\$1932	million FHR of corn
$(500 * 135)/100 =$	<u>675</u>	million FHR of wheat
TOTAL	\$2607	million

- This analysis does not take into account CCC expenditures. If this grain is defaulted at the end of the period, then the government becomes a major market for grain with corresponding costs.
- If this action is not taken to move all crops back into the price mid-range, the government plus the farm community will experience the results of an inelastic crops industry. Too much supply relative to demand will continually place down-side price pressure with substantial government treasury exposure in the future.
- Unless a longer run budget constraint is considered, the agricultural industry, especially the crops sector, will very likely be exposed to an extremely low price path, with excessive reserve levels and continued high government cost.
- An additional problem that will become more constraining over time, if the reserves are not reduced, is exemplified in Figures 6 and 7. Reserves captured in 1981/82 for corn have a release of 3.15, additional reserves for the 1982/83 year will have a 3.25 release. If the loan rate continues to increase at about the 6 percent per year pace, then the trading range will necessarily become smaller. Since a poor crop of corn is generally around 1 billion bushels below trend, this implies at least two poor years in succession of reserves.

A similar case prevails for wheat market price, Figure 7. The majority of wheat reserves are eligible to return to the market at the 4.65 level. With 925

FIGURE 6

COPN PRICES
Comparison of Loan, Target
& Reserve Release Prices



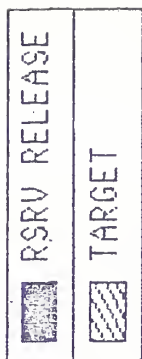
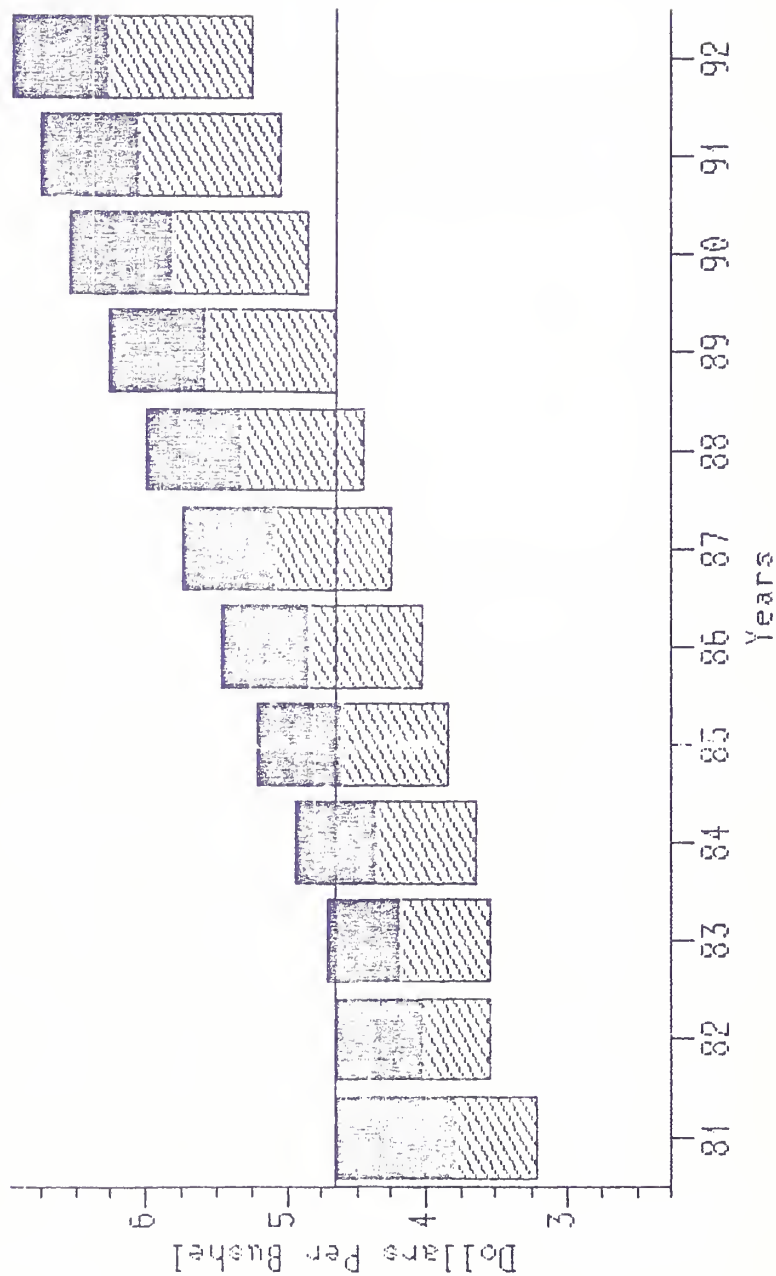


Figure 7
WHEAT PRICES
Comparison of Loan, Target
& Reserve Release Prices



million bushels projected in the category by June 1983, it is likely that these reserves will not be worked down until the mid 1980s.

Figures 10 and 11 reflect the likely path of reserves if a strong program is implemented to reduce acreage. These estimates were generated in September 1982 at a point where total feedgrain reserves were slightly less than current estimates. However, under the normal weather assumptions associated with this projection, reduced acreage-paid diversion programs would be necessary through 1986/87 to realign corn around the buffer stock reserves objectives.

Realignment of the wheat industry is not estimated to take as long; however, strong cross price pressure from corn is projected to hold wheat prices below center line level, or mid-range of the loan and release price.

Table VI contains price impacts derived from the Agricultural Model at the University of Missouri. The table indicates the rather strong cross price effects associated with the corn, soybean, and livestock sectors. The price impacts in the wheat sector alone are slightly negative, however, crops price pressure associated with the strong corn and soybean sectors results in a net negative price estimate for the year.

It is apparent from this table that any reduction in supplies of corn and soybeans will have a positive price impact on wheat. And it is very likely that wheat prices will remain under pressure until both the corn and wheat sectors are realigned around substantially lower reserve levels.

The impacts in the table were obtained by solving the entire modeling system for each variable change shown in the table. These localized solutions imply that each 100 million bushels increase in wheat supplies will reduce season average price 20 cents. If exports increase 100 million bushels price increase 32 cents, cross effects from corn imply a negative 7 cent price impact for each 100

Figure 8

CORN
Breakdown of Ending Stocks by Category

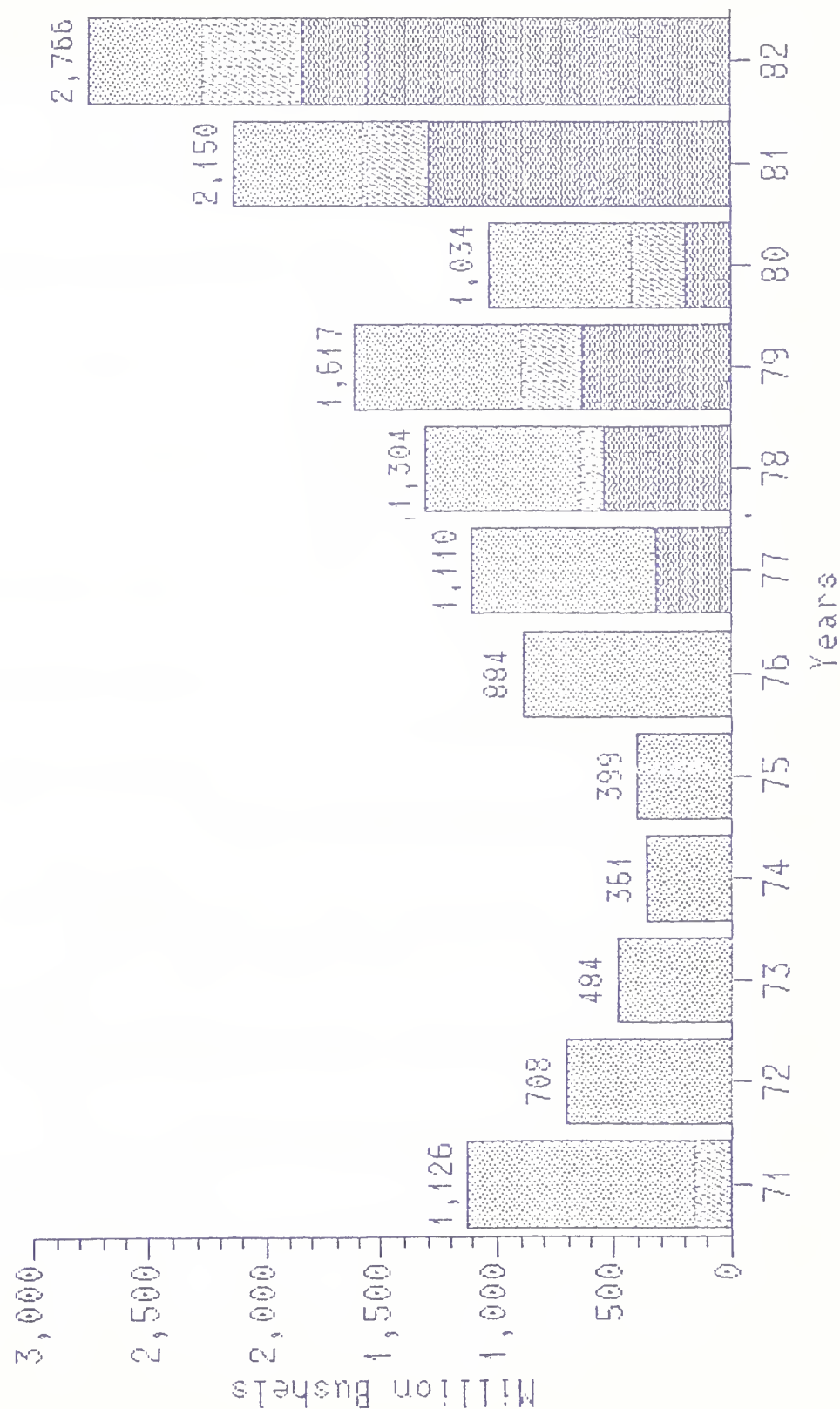


Figure 9

WHEAT Breakdown of Ending Stocks by Category

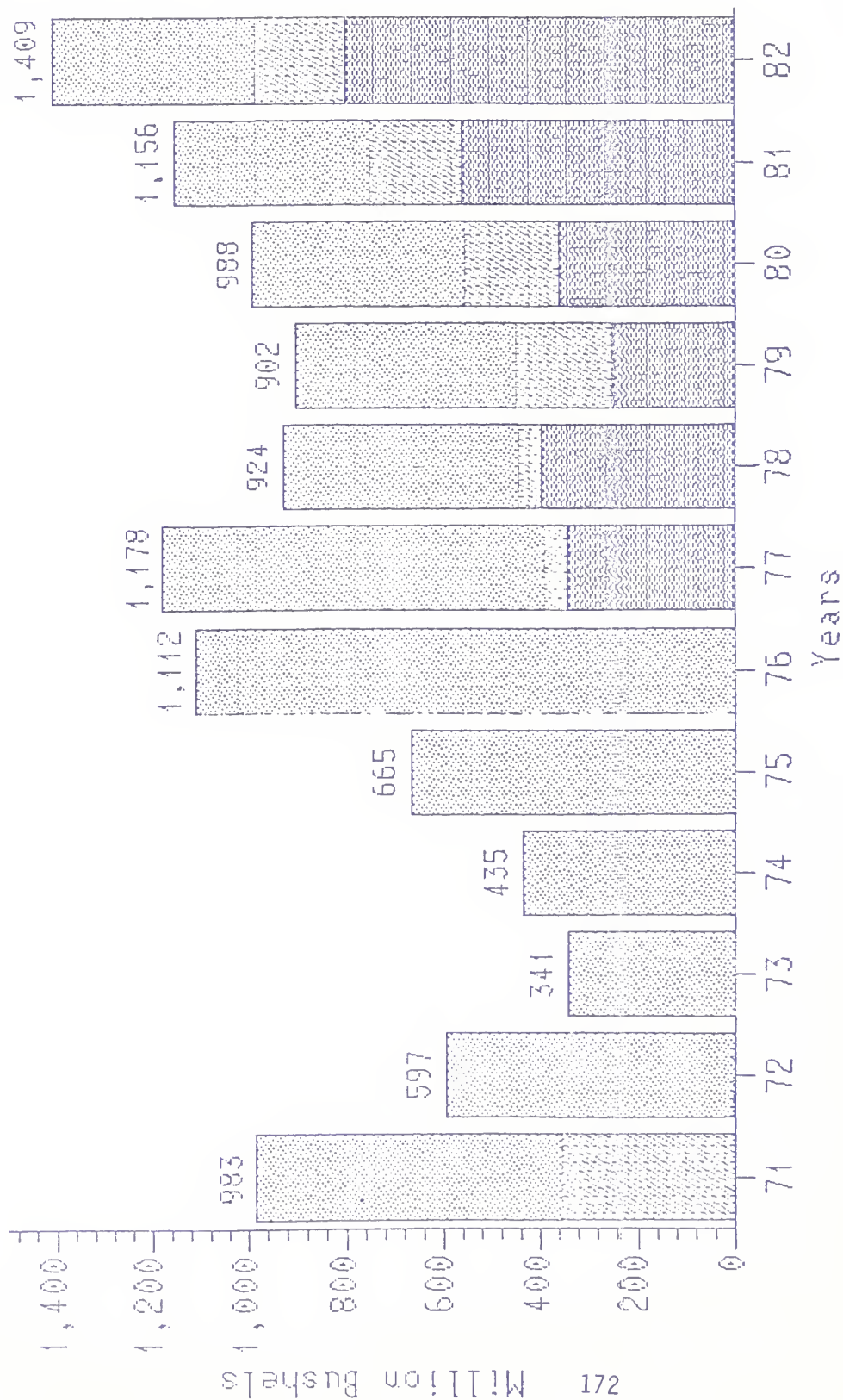
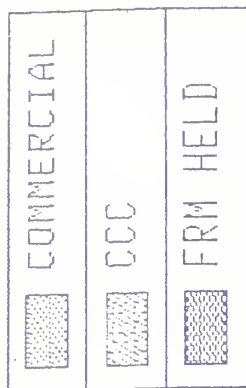


FIGURE 10
CORN
Breakdown of Ending Stocks by Category

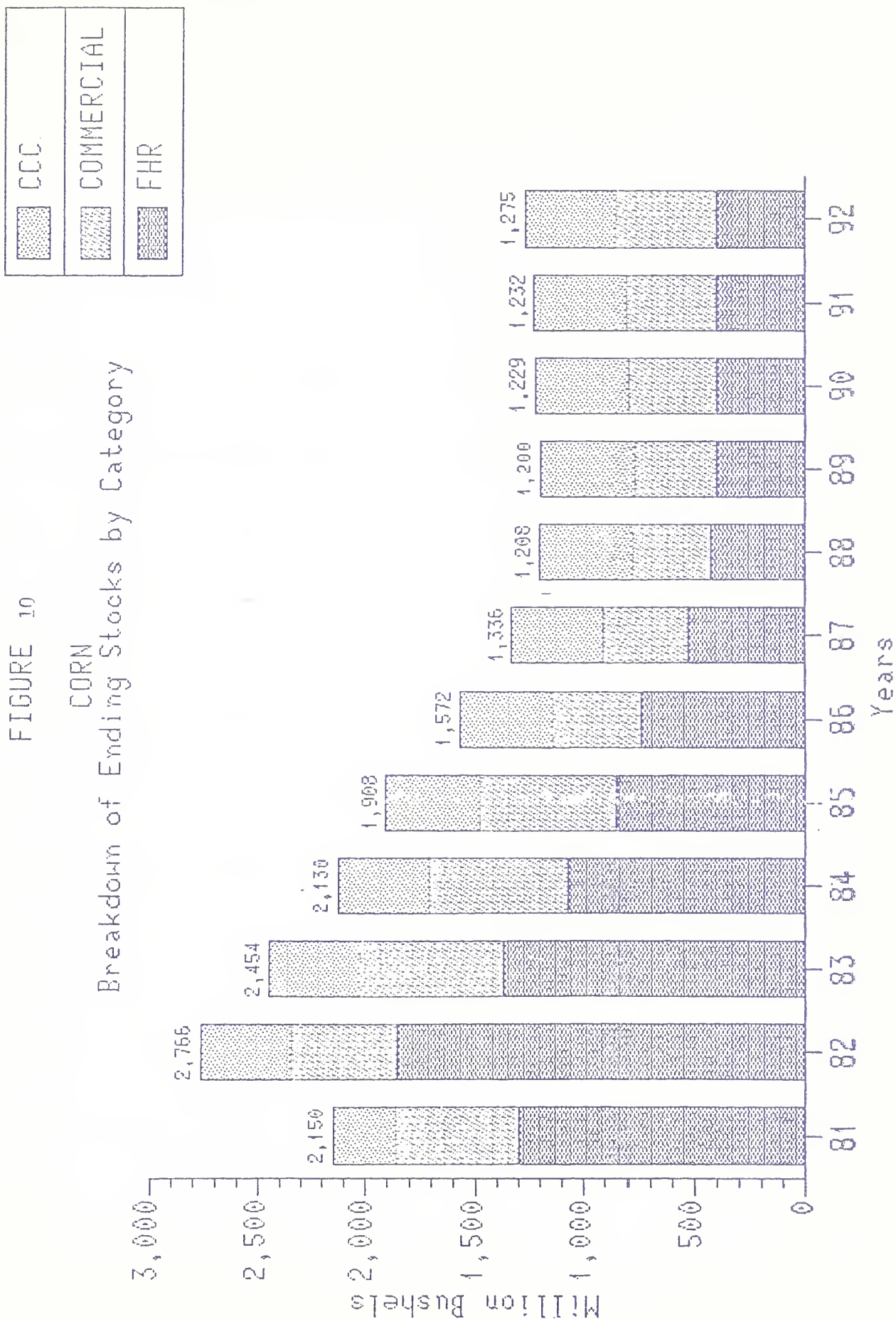


Figure 11

WHEAT
Breakdown of Ending Stocks by Category

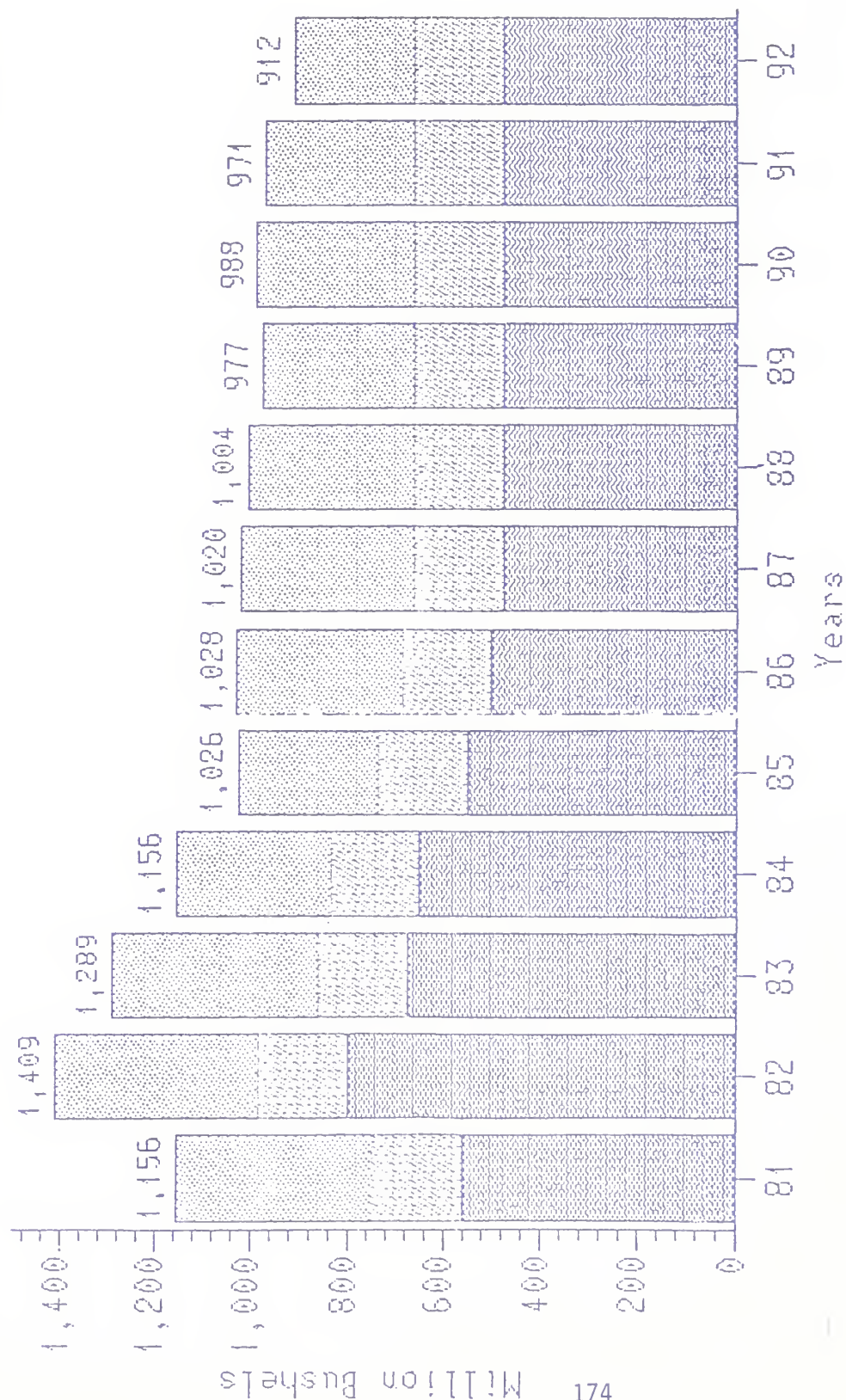


Table VI

WHEAT ESTIMATED CHANGES 1981/82 OVER 1980/81

ITEM	UNITS	ESTIMATED CHANGE 82/83 OVER 81/82	PRICE IMPACT FROM MODEL	NET CHANGE
WHEAT				
SUPPLY	100 MIL. BU.	192	-.20	-.38
FARMER RESERVE	100 MIL. BU.	363	.20	.73
GOV. PURCHASE	100 MIL. BU.	0	.20	.00
U. S. EXPORTS	100 MIL. BU.	-123	.32	-.39
FUTURE SUPPLY	100 MIL. BU.	35	-.05	-.02
CORN				
SUPPLY	100 MIL. BU.	1444	-.07	-1.01
FARMER RESERVES	100 MIL. BU.	900	.07	.63
GOV. PURCHASE	100 MIL. BU.	165	.06	.10
EXPORTS	100 MIL. BU.	270	.07	.19
GASOHOL	100 MIL. BU.	20	.07	.01
FUTURE SUPPLY	100 MIL. BU.	-80	.02	.02
SOYBEANS				
SUPPLY	100 MIL. BU.	247	-.09	-.22
EXPORTS	100 MIL. BU.	71	.09	.06
FUTURE SUPPLY	100 MIL. BU.	-57	-.01	.01
CCC Reserves	100 mil. bu.	100	.06	.06
LIVESTOCK NUMBERS	10%	2	.30	.06
LIVESTOCK PRICES	10%	8	.03	.02
				-.14

WHEAT PRICE FORECAST FOR 1982/83

PRICE OF WHEAT 3.60 - .14 = 3.46

million bushel increase in supplies. A similar increase in soybean supplies drops wheat season average price 9 cents per bushel.

26 NOV. 1982 ONE YEAR2/VC

C O R N B A L A N C E S H E E T 11/25/82 : High : Low					
: Supply : Supply					
VARIABLE/YEAR	80/81	81/82	82/83	Variance	Variance
PLANTED	84.1	84.3	81.9		
HARVESTED	73.1	74.62	73.00		
YIELD	90.94	109.9	114.2		
SUPPLY					
BEGINNING STOCKS	1620	1040	2371		
PRODUCTION	6648	8201	8337	200	-200
IMPORTS	1	1	1		
TOTAL SUPPLY	8269	9241	10709	10909	10509
DISAPPEARANCE					
FEED	4139	4078	4350	50	-100
FOOD AND SEED	690	732	730	15	-15
GASOHOL	45	80	100	0	0
TOTAL DOMESTIC	4874	4890	5180	5245	5065
EXPORTS	2355	1980	2250	50	-100
TOTAL DISAPPEARANCE	7229	6870	7430	7545	7215
ENDING STOCKS	1040	2371	3279	3364	3294
FARMER HELD RSRVS	185	1300	2200	100	0
CCC	238	285	450	0	0
"FREE STOCKS"	617	786	629	614	644
ANNUAL AVG PRICE	3.11	2.52	2.24	2.14	2.58
LOAN PRICE	2.25	2.40	2.55	---	---
TARGET PRICE	2.35	2.40	2.70	---	---
RELEASE PRICE	2.81	3.15	3.25	---	---
CALL PRICE	2.94	---	---	---	---

S O Y B E A N B A L A N C E S H E E T : High : Low					
: Supply : Supply					
VARIABLE/YEAR	80/81	81/82	82/83:	Variance:	Variance
PLANTED	70.1	68.1	72.3		
HARVESTED	67.9	66.7	70.90		
YIELD	26.39	29.98	32.4		
SUPPLY					
BEGINNING STOCKS	359	316	266		
PRODUCTION	1792	2000	2297	150	-150
IMPORTS	0	0	0		
TOTAL SUPPLY	2151	2316	2563	2713	2413
DISAPPEARANCE					
CRUSH	1020	1030	1115	50	-50
SEED, IND, RESIDUAL	89	91	88	0	0
TOTAL DOMESTIC	1109	1121	1203	1253	1153
EXPORTS	724	929	1000	100	-50
TOTAL DISAPPEARANCE	1833	2050	2203	2353	2103
ENDING STOCKS	318	266	360	360	310
CCC STOCKS	0	0	100	50	0
FREE STOCKS	318	266	260	210	210
ANNUAL AVG PRICE	7.57	6.28	5.20	4.89	5.86
LOAN PRICE	5.02	5.02	5.02	---	---
BEAN/CORN RATIO	2.43	2.50	2.32	---	---
L I V E S T O C K I N F O R M A T I O N :					
VARIABLE/YEAR	80/81	81/82	82/83:		
LIVESTOCK NUMBERS	-0.70	-3.00	2.00:		
LIVESTOCK PRICES	9.70	13.00	8.00:		

W H E A T B A L A N C E S H E E T			:	High	:	Low
			:	Supply	:	Supply
VARIABLE/YEAR	80/81	81/82	82/83:	Variance:	Variance:	
PLANTED	80.4	88.9	87.2			
HARVESTED	70.9	80.9	79.00			
YIELD	33.4	34.5	35.6			
SUPPLY						
BEGINNING STOCKS	902	982	1153			
PRODUCTION	2370	2791	2812	50		-50
IMPORTS	2	2	2			
TOTAL SUPPLY	3274	3775	3967	4017		3917
DISAPPEARANCE						
FEED	51	137	150	10		-10
FOOD	617	600	620	5		-5
INDUSTRY, SEED	114	112	105	5		-5
TOTAL DOMESTIC	782	849	875	895		855
EXPORTS	1510	1773	1650	50		-50
TOTAL DISAPPEARANCE	2292	2622	2525	2595		2455
ENDING STOCKS	982	1153	1442	1422		1462
FARMER HELD RSRVS	360	562	925	0		0
CCC	196	187	187	0		0
"FREE STOCKS"	426	404	330	310		350
ANNUAL AVG PRICE	3.91	3.70	3.46	3.47		3.56
LOAN PRICE	3.00	3.20	3.55	---		---
TARGET PRICE	3.60	3.81	4.05	---		---
RELEASE PRICE	4.20	4.65	4.65	---		---
CALL PRICE	5.25	---	---	---		---

26 Nov. 1982

ONEYEAR/VC:0

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:-----:
: C O R N   B A L A N C E   S H E E T           : High : Low
:-----:-----: Supply : Supply
: VARIABLE/YEAR      81/82      82/83      83/84:Variance:Variance
:-----:-----:-----:-----:-----:
: PLANTED             84.3       81.9       79
: HARVESTED           74.62      72.8       69
:   YIELD             109.9      114.2      106.5
:
:           SUPPLY
: BEGINNING STOCKS    1040       2372       3256
: PRODUCTION          8201       8314       7349       500      -500
: IMPORTS              1         1         1
: TOTAL SUPPLY        9242      10686      10606      11106     10106
:
:           DISAPPEARANCE
: FEED                4078       4350       4450       200      -200
: FOOD AND SEED        732       730       755        10       -10
: GASOHOL              80        100       130        25       -25
: TOTAL DOMESTIC       4890      5180-      5335      5570     5100
:
: EXPORTS             1980       2250       2350       200      -200
:
: TOTAL DISAPPEARANCE  6870       7430       7685      8120     7250
:
:   ENDING STOCKS     2372       3256       2921      2986     2856
: FARMER HELD RSRVS   1300       2200       1950        0     -250
: CCC                 285        450       450       200        0
: "FREE STOCKS"       787        606       521       363     706
:-----:-----:-----:-----:-----:
: ANNUAL AVG PRICE    2.51       2.30       2.66       2.32     2.85
: LOAN PRICE          2.40       2.55       2.65       ---      ---
: TARGET PRICE        2.40       2.7        2.86       ---      ---
: RELEASE PRICE       3.15       3.25       3.45       ---      ---
: CALL PRICE          ---        ---        ---        ---      ---
:-----:-----:-----:-----:-----:

```

S O Y B E A N B A L A N C E S H E E T				High	Low
				Supply	Supply
VARIABLE/YEAR	81/82	82/83	83/84	Variance	Variance
PLANTED	68	72.3	70		
HARVESTED	66.7	70.9	69		
YIELD	29.98	32.4	31.1		
SUPPLY					
BEGINNING STOCKS	318	268	362		
PRODUCTION	2000	2297	2146	200	-200
IMPORTS	0	0	0		
TOTAL SUPPLY	2318	2565	2508	2708	2308
DISAPPEARANCE					
CRUSH	1030	1115	1150	50	-50
SEED, IND, RESIDUAL	91	88	90	0	0
TOTAL DOMESTIC	1121	1203	1240	1290	1190
EXPORTS	929	1000	980	50	-50
TOTAL DISAPPEARANCE	2050	2203	2220	2320	2120
ENDING STOCKS	268	362	288	388	188
CCC STOCKS	0	100	100	50	-100
"FREE" STOCKS	268	262	188	237.726	187.726
ANNUAL AVG PRICE	6.27	5.19	5.91	4.96	6.50
LOAN PRICE	5.02	5.02	5.02	---	---
BEAN/CORN RATIO	2.50	2.26	2.22	---	---
L I V E S T O C K I N F O R M A T I O N					
VARIABLE/YEAR	81/82	82/83	83/84		
LIVESTOCK NUMBERS	-3.00	2.00	4.50		
LIVESTOCK PRICES	13.00	8.00	-1.50		

W H E A T B A L A N C E S H E E T				High	Low
				Supply	Supply
VARIABLE/YEAR	81/82	82/83	83/84	Variance	Variance
PLANTED	88.9	87.2	83.5		
HARVESTED	80.9	78.98	73.5		
YIELD	34.5	35.6	34.8		
SUPPLY					
BEGINNING STOCKS	982	1153	1442		
PRODUCTION	2791	2812	2558	200	-200
IMPORTS	2	2	2		
TOTAL SUPPLY	3775	3967	4002	4202	3802
DISAPPEARANCE					
FEED	137	150	100	25	-25
FOOD	600	620	660	5	-5
INDUSTRY, SEED	112	105	100	5	-5
TOTAL DOMESTIC	849	875	860	895	825
EXPORTS	1773	1650	1700	100	100
TOTAL DISAPPEARANCE	2622	2525	2560	2660	2460
ENDING STOCKS	1153	1442	1442	1542	1342
FARMER HELD RSRVS	562	925	925	0	0
CCC	187	187	187	0	0
"FREE STOCKS"	404	330	330	430	230
ANNUAL AVG PRICE	3.60	3.46	3.61	3.35	3.78
LOAN PRICE	3.20	3.55	3.65	---	---
TARGET PRICE	3.81	4.05	4.30	---	---
RELEASE PRICE	4.65	4.65	4.65	---	---
CALL PRICE	4.63	5.25	---	---	---

C O R N P R I C E M O D E L				Low	High
				Price	Price
VARIABLE/YEAR	MULTPLR	82/83	83/84	Variance	Variance
CORN					
SUPPLY	-0.16	-2.31	0.13	-0.67	0.93
FARMER HELD RSRVS	0.15	1.35	-0.38	-0.38	-0.75
GOVMNT PURCHS	0.15	0.25	0.00	0.30	0.00
EXPORTS	0.17	0.46	0.17	0.51	-0.17
GASOHOL	0.16	0.03	0.05	0.09	0.01
FUTURE SUPPLY	-0.01	0.01	-0.01	-0.01	-0.01
SOYBEANS					
SUPPLY	-0.20	-0.49	0.11	-0.29	0.51
EXPORTS	0.22	0.16	-0.04	0.07	-0.15
CCC STOCKS	0.14	0.14	0.00	0.07	-0.14
FUTURE SUPPLY	-0.01	0.01	-0.01	-0.01	-0.01
LIVESTOCK NUMBERS	0.76	0.15	0.34	0.34	0.34
LIVESTOCK PRICES	0.06	0.05	-0.01	-0.01	-0.01
NET PRICE EFFECT		-0.21	0.36	0.02	0.55
LAST YEAR'S PRICE		2.51	2.30	2.30	2.30
...ANNUAL AVG PRICE 80/81		2.30	2.66	2.32	2.85

S O Y B E A N P R I C E M O D E L:				Low	High
				Price	Price
VARIABLE/YEAR	MULTPLR	82/83	83/84:	Variance:	Variance
CORN					
SUPPLY	-0.15	-2.17	0.12	-0.63	0.87
FARMER HELD RSRVS	0.08	0.72	-0.20	-0.20	-0.40
GOVMNT PURCHS	0.08	0.13	0.00	0.16	0.00
EXPORTS	0.15	0.41	0.15	0.45	-0.15
GASDHOL	0.15	0.03	0.05	0.08	0.01
FUTURE SUPPLY	-0.02	0.02	-0.02	-0.02	-0.02
SOYBEANS					
SUPPLY	-0.68	-1.68	0.39	-0.97	1.75
EXPORTS	0.70	0.50	-0.14	0.21	-0.49
CCC STOCKS	0.63	0.63	0.00	0.32	-0.63
FUTURE SUPPLY	-0.06	0.03	-0.06	-0.06	-0.06
LIVESTOCK NUMBERS	1.00	0.20	0.45	0.45	0.45
LIVESTOCK PRICES	0.13	0.11	-0.02	-0.02	-0.02
NET PRICE EFFECT					
		-1.08	0.71	-0.23	1.31
LAST YEAR'S PRICE					
		6.27	5.19	5.19	5.19
...ANNUAL AVG PRICE					
		5.19	5.91	4.96	6.50

W H E A T P R I C E M O D E L				Low	High
				Price	Price
VARIABLE/YEAR	MULTPLR	82/83	83/84	Variance	Variance
WHEAT					
SUPPLY	-0.20	-0.38	-0.07	-0.47	0.33
FARMER HELD RSRV	0.20	0.73	0.00	0.00	0.00
CCC	0.20	0.00	0.00	0.00	0.00
EXPORTS	0.32	-0.39	0.16	0.48	-0.16
FUTURE SUPPLY	-0.05	-0.02	-0.05	-0.05	-0.05
CORN					
SUPPLY	-0.07	-1.01	0.06	-0.29	0.41
FARMER HELD RSRVS	0.07	0.63	-0.18	-0.18	-0.35
GOVMNT PURCHS	0.06	0.10	0.00	0.12	0.00
EXPORTS	0.07	0.19	0.07	0.21	-0.07
GASOHOL	0.07	0.01	0.02	0.04	0.00
FUTURE SUPPLY	-0.02	0.02	-0.02	-0.02	-0.02
SOYBEANS					
SUPPLY	-0.09	-0.22	0.05	-0.13	0.23
EXPORTS	0.09	0.06	-0.02	0.03	-0.06
CCC STOCKS	0.06	0.06	0.00	0.03	-0.06
FUTURE SUPPLY	-0.01	0.01	-0.01	-0.01	-0.01
LIVESTOCK					
LIVESTOCK NUMBERS	0.30	0.06	0.14	0.14	0.14
LIVESTOCK PRICES	0.03	0.02	-0.00	-0.00	-0.00
NET PRICE CHANGE					
LAST YEAR'S PRICE		-0.14	0.15	-0.11	0.32
....ANNUAL AVG PRICE		3.60	3.46	3.46	3.46
		3.46	3.61	3.35	3.78

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OUTLOOK '83

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INTRODUCTION

This presentation covers the current world situation and outlook for sugar. Mr. Robert Barry and Mr. James Fry will cover the domestic outlook and world sweetener substitution and sugar trade patterns, respectively. At our follow-up session we all will be available for further questions. In addition, James Truran, head of the Sugar Group, Foreign Agricultural Service, will make informal remarks concerning the U.S. sugar quota system and developments at the recent International Sugar Organization meeting in London.

In this presentation, I would like to focus briefly on world production, consumption, trade and the direction sugar prices are likely to take. As we are all aware, the world sugar supply/demand situation has recovered rapidly from the deficit situation of 1980. World sugar production rebounded in 1981/82 reaching record levels. This growth in production has outpaced world consumption creating a surplus situation. Prospects are for another upward spiral in stocks at the end of the 1982/83 season. In this context, prices have declined sharply since the spring of 1981 and appear likely to remain weak until the gap narrows between production and consumption.

Production

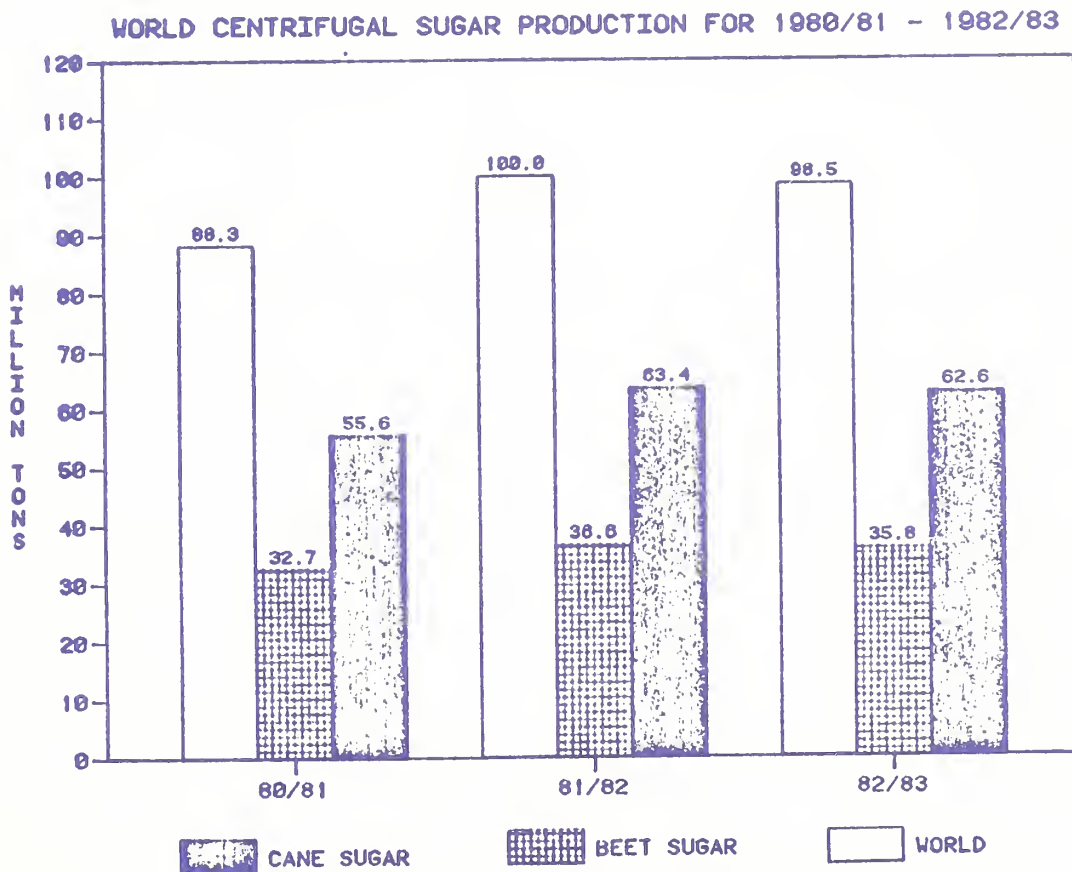
World centrifugal sugar production (raw value) in 1982/83 is forecast by Foreign Agricultural Service's Foreign Production Estimates Division (FAS/FPED) at 98.5 million metric tons, down 1.52 million from the revised record 1981/82 output of nearly 100 million tons (chart 1). Of total world production in 1982/83, sugar from beets is expected to account for 35.8 million tons (36.4 percent) and sugar from cane 62.6 million (63.6 percent). Low world sugar prices have resulted in reduced beet area compared with 1981/82, but slightly more sugarcane area is expected to be harvested. Cane sugar output, however, is expected to decline because of reduced sugar content (table 1).

Of the projected world output of beet sugar, production in the European Community (EC) is expected to account for about 40 percent or 14.3 million tons. This is down nearly 10 percent from the record 15.8 million tons produced in 1981/82, yields are likely to be good owing to generally favorable growing and harvesting conditions. Beet area harvested for sugar this season in the EC is estimated to be down 9 percent from the record area of 2.0 million hectares harvested in 1981/82.

Beet sugar production in Eastern Europe and non-EC western European countries is expected to yield 5.8 million tons and 2.3 million tons, respectively. Poland seeded nearly 5 percent more area, but adverse weather delayed seeding and drought affected about 75 percent of the total area planted to beets. As a result, Polish beet production is expected to decline 12 percent, but reported higher sugar content should result in only a 6 percent smaller centrifugal sugar output of 1.8 million tons which accounts for 30 percent of Eastern Europe's total output. Spain, the largest producer in the non-EC Western Europe group, is expected to produce 6 percent more sugar in 1982/83 from a 4 percent larger beet area and a higher sugar yield.

The Soviet Union, the world's largest beet sugar producer, has a new crop potential significantly above the disastrous 1981/82 crop of 60.6 million tons of beets, from which an estimated 6.4 million tons of sugar was produced. Beet production for 1982/83 is currently estimated at 80 million tons, up 32 percent, but adverse weather and continued problems with post-harvest piling and transportation of beets is expected to result in only a 14 percent increase in raw sugar output.

Other major world beet sugar producers, such as the United States, Turkey and increasingly China, are looking at mixed prospects. The United States is harvesting a 1982/83 beet sugar crop currently estimated at 2.6 million tons, down from 3.0 million tons produced past year. This downturn reflects both more normal yields and a 15 percent reduction in sugarbeet area spurred, in large part, by the closing of several beet processing plants. Turkey, in



contrast, is expecting a record 1.5 million tons as area harvested for beets has expanded nearly 40 percent over the past two seasons. China's beet sugar production is expected to show only marginal gains over last year, yielding 665,000 tons accounting for 18 percent of its total sugar crop projected at 3.7 million tons. Owing to a number of incentives offered growers over the past three years, its harvested area has increased by over 45 percent from 1979/80 levels.

Of the 62.6 million tons of cane sugar expected to be produced in 1982/83, 31.0 million tons, or about one-half, is expected to be produced in the Western Hemisphere, 20.3 million tons (32.4 percent) in Asia, and 7.0 (11 percent) and 4.1 million tons (6.5 percent) in Africa and Oceania, respectively.

Sugar production in Brazil and Cuba, the Western Hemisphere's two major producing countries, accounts for over 55 percent of the region's total. Brazil is expected to regain its position as the world's largest centrifugal sugar producer by producing a record 9.4 million tons of raw sugar from 100 million tons of cane. Sugarcane area harvested for sugar for the 1982/83 season is expected to increase by 11 percent to a record 1.9 million hectares. An additional 60 million tons of cane are expected to be harvested in Brazil this season to produce a projected 5.2 billion liters of alcohol.

Owing to depressed world sugar prices, there is currently considerable speculation that Brazil's 1983/84 sugar crop will be smaller and additional quantities of cane will be channeled into alcohol production.

With respect to Cuba, problems with availability of fertilizers and herbicides are expected to reduce sugar production from the officially reported 1981/82 output of 8.2 million tons to an estimated 7.9 million tons. Cuba, however, has apparently overcome the sugarcane rust problem which plagued its sugar industry in recent years. This has been accomplished in large part by the planting of rust-resistant cane varieties.

The Western Hemisphere's next largest cane sugar producers, Mexico, the United States, Argentina, Colombia and the Dominican Republic, all expect somewhat smaller output. The most significant change is a 5 percent decline in Mexico's expected output as severe drought has plagued major growing regions over the past few months. In addition, its mills are encountering increasing problems in obtaining imported spare parts and maintaining efficient plant operations, which reflect Mexico's current critical foreign exchange problems.

Sugar output in four of the six largest producing countries in Asia (India, Philippines, Thailand and Pakistan) is expected to decline in 1982/83. In China and Indonesia, increases of 7 to 8 percent are anticipated due to the expansion in cane area and, in Indonesia, higher sugar content. India, the world's largest sugar producer in 1981/82, produced 9.7 million tons (including 743,000 tons of khandsari) as higher prices led to a 20 percent increase in cane area and production. For 1982/83, favorable domestic prices are expected to maintain cane area near last year's level, but lower sugar recovery rates and lower yields are expected to reduce sugar output to 8.4 million tons.

Damage by typhoons and higher input costs are expected to reduce sugar production in the Philippines to 2.45 million tons, compared with 2.50 million tons in 1981/82. In Thailand, farm-level liquidity problems caused by the influence of lower world prices have brought about lower fertilizer use and less attention to cultural practices. When combined with less favorable growing conditions, raw sugar output is expected to drop 25 percent from the record production of 1981/82 to 2.07 million tons, but will still be Thailand's third largest crop on record.

The Republic of South Africa, which accounts for about one-third of all of Africa's sugar production, is expected to produce a record 2.3 million tons, up 5.6 percent from the 1981/82 level and nearly 35 percent over the drought-reduced 1980/81 output. Area harvested is expected to be over 4 percent larger and sugar content is reported to be higher due to generally favorable weather. The Southern Hemisphere's other major cane sugar producer, Australia, is also anticipating record output. Despite some early season problems, a record cane crush of 25.7 million tons, yielding 3.6 million tons of sugar, is expected as higher cane yields more than offset a somewhat smaller harvested area.

SUGAR PRODUCTION BY TYPE AND REGION
1980/81 - 1982/83
(1,000 metric tons)

Region	1980/81		1981/82		1982/83	
	Beet	Cane	Beet	Cane	Beet	Cane
North America.....	2,964	5,016	3,129	5,314	2,651	5,325
South America.....	302	13,279	189	13,326	274	14,366
Central America.....	0	1,521	0	1,623	0	1,666
Caribbean.....	0	9,238	0	9,993	0	9,682
European Community.....	12,934	0	15,849	0	14,302	0
Other Western Europe....	1,980	16	2,199	17	2,286	15
Eastern Europe.....	4,757	0	5,791	0	5,771	0
USSR.....	7,196	0	6,400	0	7,300	0
North Africa.....	321	898	335	1,032	369	1,045
Other Africa.....	0	4,959	0	5,680	0	5,901
Middle East.....	1,001	245	1,479	250	1,591	300
Asia.....	1,259	16,530	1,231	22,073	1,270	20,254
Oceania.....	0	3,849	0	4,071	0	4,090
Total, by type.....	32,714	55,551	36,602	63,379	35,814	62,644
Total Centrifugal Sugar:	88,265		99,981		98,458	

Consumption

World sugar consumption for 1982/83 is expected to advance 2.8 percent from the 1981/82 level to 92.1 million tons. It is believed that the current and likely continuation of relatively low world prices for sugar will exert some upward pressure on demand and thereby increase the general rate of growth in global consumption. For 1982/83, modest growth in sugar consumption is foreseen in the developing countries of Latin America, Asia and Africa, as well as in the centrally planned economies of Eastern Europe, the Soviet Union and China. This anticipated growth more than offsets expected declines or relatively stable consumption conditions in the industrialized countries of Western Europe, North America, Japan and Australia (table 2).

The structure of this growth is consistent with trends which have become evident over the past decade. In the net sugar exporting developing countries, most of which are in the Western Hemisphere, consumption is between 35 and 45 kilograms per capita, and the upward trend shows little evidence of approaching saturation levels. In the net importing developing countries, most of which are located in Asia and Africa, per capita consumption is very low, often no more than 5 to 15 kilograms per person. Particularly strong increases in demand is foreseen from Asia where sugar is an important calorie source. As in the past, sugar consumption in developing countries is strongly influenced by the level of domestic production. This point is illustrated by the growth in sugar consumption over the past two years in India and China, both of which have experienced considerable expansion in domestic production.

Sugar usage in most industrialized countries this season is expected to either stagnate or decline. In the high income countries of Western Europe and North America per capita consumption approaches saturation at a level of between 45 and 55 kgs. The income elasticity of demand for sugar in these countries is very low and there appears to be no clear relation between per capita consumption and per capita production in contrast to the situations in many developing countries.

In many industrialized countries, over 75 to 80 percent of sugar consumption is consumed indirectly in prepared foodstuffs and beverages. The effects of economic recession in the western world have dampened demand for sugar-containing products over the past two years. Even more importantly, however, has been the influence of sugar substitutes on demand in industrialized countries. Two kinds of sugar substitutes are displacing sugar--non-caloric sweeteners that are being consumed increasingly for dietary reasons, and caloric sweeteners, mainly corn based ones--such as high fructose corn syrup (HFCS). The present market potential of these corn-based sugar substitutes is closely linked to demand for liquid sweeteners.

In sharp contrast to this trend, the current impact of non-caloric and caloric sugar substitutes are negligible in developing countries and are likely to remain so over the next several years.

SUGAR CONSUMPTION BY REGION
1980/81 - 1982/83
(1,000 metric tons)

Region	1980/81	1981/82	1982/83
North America.....	13,134	12,953	12,742
South America.....	10,498	10,290	10,572
Central America.....	801	798	838
Caribbean.....	980	1,005	1,025
European Community.....	10,311	10,205	10,181
Other Western Europe.....	2,792	2,681	2,728
Eastern Europe.....	5,570	5,359	5,763
USSR.....	12,100	12,050	12,340
North Africa.....	3,166	3,275	3,400
Other Africa.....	3,817	3,962	4,050
Middle East.....	3,211	3,280	3,470
Asia.....	19,109	20,242	21,419
Oceania.....	822	831	828
Others.....	2,725	2,700	2,750
Total.....	89,036	89,631	92,105

Trade

For the sugar year just begun, most aspects of world sugar trade are expected to follow recent trends. Total world sugar imports are likely to approximate 26 million tons. As usual, only about one-quarter of annual production will enter world trade. The remainder will be consumed or used in stock building in those countries where it is produced.

The structure of world sugar imports for 1982/83 can be divided into three parts:--sugar going to centrally planned economies under "special trade arrangements";--imports to be absorbed by industrialized countries;--and sugar destined to developing countries. About one-quarter of world imports go to the centrally planned economies under "special trade arrangements". Cuba is the primary supplier, and the USSR, Eastern Europe and China constitute the bulk of the import market. Over one-third of world sugar imports are expected to be absorbed by industrialized countries, with the United States and Japan accounting for 2.5 million tons (27 percent) and 1.9 million tons (21 percent), respectively.

The remaining share of world sugar imports (roughly 40 percent) will be shipped to developing countries in Africa, the Middle East and Asia. Many of the developing countries of the Western Hemisphere are major net exporters; however, Mexico, Venezuela and Chile again will be significant net importers of sugar during 1982/83. The countries of North Africa are expected to import about 2 million tons during 1982/83, with Egypt and Algeria accounting for 36 percent and 26 percent of this total, respectively. In sub-Saharan Africa, only Nigeria is a significant sugar importer, accounting for three-fourths of the "other Africa" total. The Middle East region is expected to import about 3.1 million tons during 1982/83, up sharply from last season as higher import needs are anticipated in Iran, Iraq and Saudi Arabia.

Import needs in Asia are expected to be off from 1981/82 levels, in part, reflecting higher domestic output in some traditional net importing countries in south and southeast Asia, particularly Indonesia. In East Asia, China's import needs are expected to be off following a record domestic crop last year and prospects for another good crop this year. Japan is expected to import 1.9 million tons during 1982/83, down 13 percent from the previous year reflecting, in part, the growth in the use of HFCS.

It is important to note that world supplies available for export exceed import expectations. Even in times of low world prices and especially during a worldwide recession, importers are not likely to import above their consumption and pipeline needs. As a result, it is likely that a sizeable portion of exportable supplies will remain in the hands of exporters and thereby contribute to the upward spiraling of stock levels in many net exporting countries.

WORLD SUGAR IMPORTS
(1,000 metric tons)

Region	1980/81	1981/82	1982/83
North America.....	5,252	4,999	4,560
South America.....	767	657	550
Central America.....	---	20	4
Caribbean.....	36	63	62
European Community.....	2,040	2,445	2,302
Other Western Europe.....	837	980	892
Eastern Europe.....	1,106	1,040	706
USSR.....	5,170	5,280	5,500
North Africa.....	1,985	2,027	2,065
Other Africa.....	971	817	877
Middle East.....	2,407	2,232	3,125
Asia.....	5,577	5,818	4,698
Oceania.....	184	146	160
Others.....	739	768	795
World Total.....	27,071	27,292	26,316

Stocks

Given our estimates for 1982/83 production and consumption levels, we foresee an imbalance in these two variables exceeding 6 million tons. When added to carryover stocks from 1981/82, end of year stocks for 1982/83 are expected to total a record 41.7 million tons--representing an unprecedented stock/consumption ratio of 45 percent. This far exceeds the 25 percent stock/consumption ratio level generally regarded as adequate to meet world sugar needs and establish reasonable prices.

With consumption expected to remain sluggish through 1982/83, stocks will continue to build both intentionally due to ISA and EC stock piling policies and unintentionally. Only if production estimates significantly change due to weather problems will this stock level be greatly diminished. It appears likely, however, that stocks will reach a peak, and planned output cuts by Brazil and the EC could put the world sugar supply/demand situation in better balance in 1983/84.

WORLD SUGAR SUPPLY/DEMAND BALANCE
1980/81-1982/83
(Million Metric Tons)

Crop Year:	Total World	Production	: Greater(+) or	World Stocks	Crop Year
Ending Aug. 31	Production	Consumption	: Less(-) than	: as end of:	: End Stocks as % of
			Consumption	Crop Year	Consumption
1980/81.....	88.27	89.04	(-) 0.77	25.02	28.1%
1981/82.....	99.98	89.63	(+) 10.35	35.37	39.5%
1982/83.....	98.46	92.11	(+) 6.35	41.72	45.0%

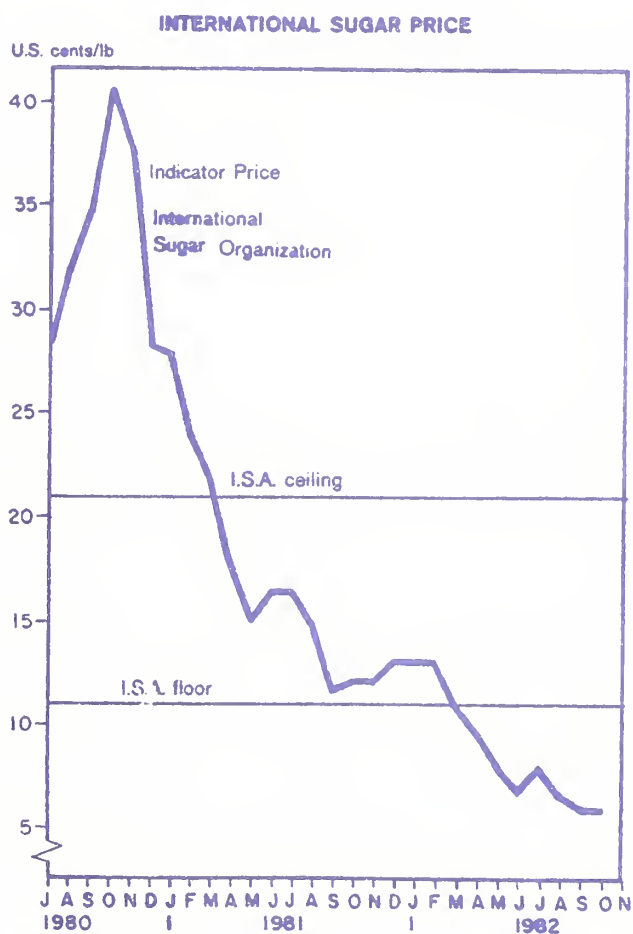
Prices

Because of their historic extreme volatility, forecasting world sugar prices is always difficult. However, we can make some reasonable assumptions regarding prices during the upcoming months.

Low sugar prices which have prevailed since the spring of 1981 have not yet stimulated demand very much. As noted earlier, consumption has continued to decline in most industrialized countries and its expansion in developing countries has been modest owing largely to worldwide recession, inflation, and increases in domestic prices for sugar recently put into effect by the governments of some low-income countries.

As we know, movement in sugar prices are closely related to world stocks. Sugar prices tend to remain depressed as long as stocks exceed about 25 percent of annual consumption. Once stocks drop below this level, they become increasingly volatile. This ratio may be mitigated to a degree by the increasing availability of sugar substitutes in industrialized countries.

Nevertheless, the expectation of a large sugar surplus in 1982/83 will continue to weigh heavily on the world sugar market. If current production/consumption estimates prove close to their mark, inevitably this surplus will continue to exert downward pressure on prices throughout 1982/83. Barring major crop disasters, price increases after 1982/83 will be gradual at best as current stocks must be worked off. Moreover, developments in key producing and consuming countries such as the United States, the Soviet Union, Brazil and the EC will be pivotal to shifts in the world sugar balance and prices as we move into 1983/84.



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INTRODUCTION

This is my third occasion to present the U.S. sweeteners outlook to this Conference. In these three years we have seen world sugar prices surge to 44 cents, then sink to 6 cents. Domestically, over the last twelve months, there have been three major developments: Passage of a sugar title in the Agriculture and Food Act of 1981, providing sugar producers a measure of shelter via a price support program through 1985/86; implementation of an import quota system in the face of a world sugar glut of unprecedented proportions; and the onset of overcapacity in the corn wet milling industry, which could but may not be a protracted condition. With that as framework, we turn to the situation and prospects for sweeteners prices, supply, and demand.

Later, we shall take a few minutes to outline prospects in coffee, tea, and cocoa. U.S. imports of these three products this year could reach \$3.8 billion.

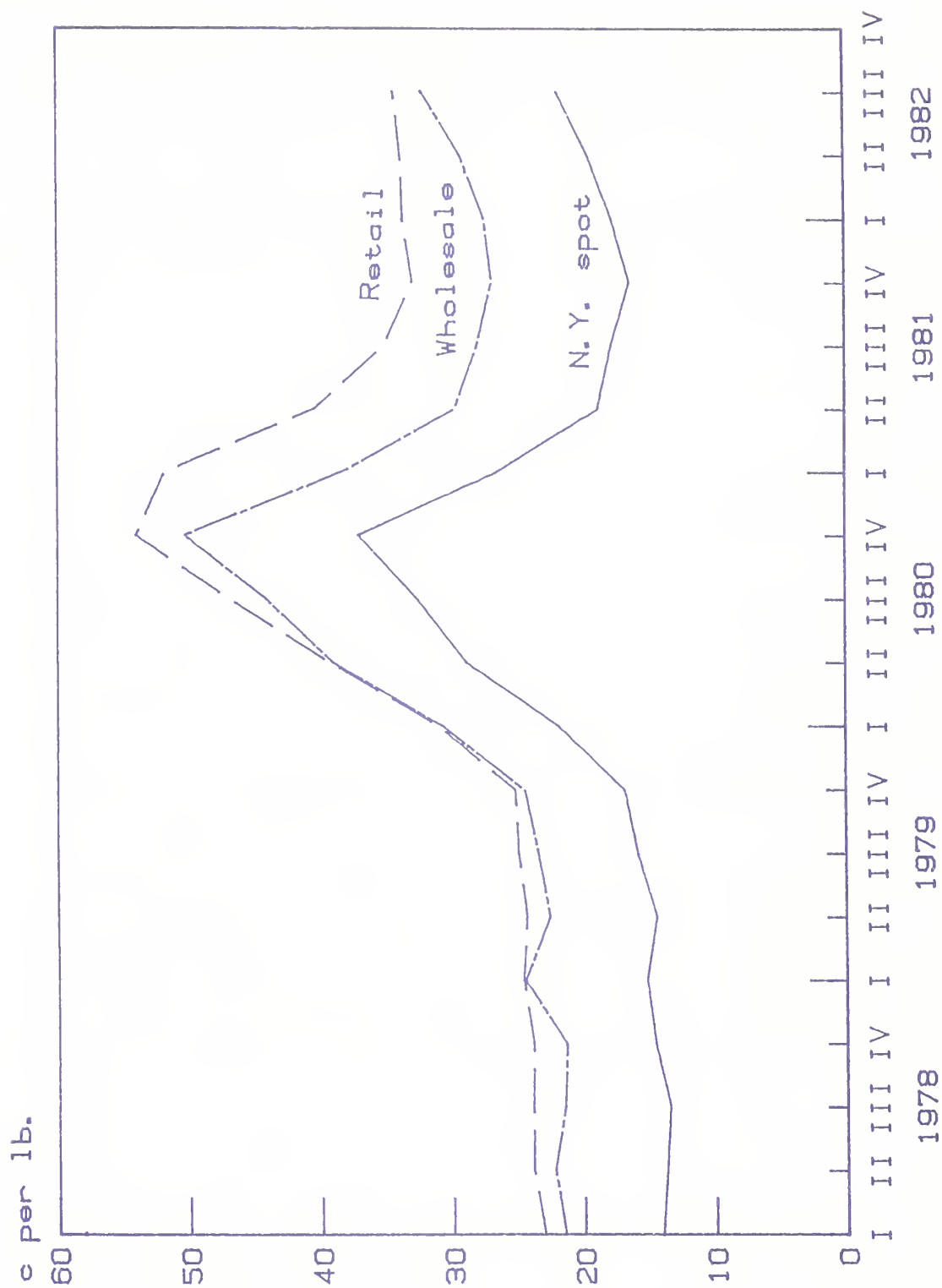
THE SWEETENER SITUATION

Sugar

Prices: The domestic price of raw sugar (cif, duty/fee-paid, New York) has been geared to the market stabilization price (MSP) ever since the sugar title of the Agriculture and Food Act was implemented in December 1981. However, prices never reached the initial MSP of 19.08 in all the time that MSP prevailed (to May 5). Large quantities of imported sugar entered the United States because of rapidly declining world prices. In early March, domestic prices fell to 16.7 cents a pound, the lowest in 1982. Prices reached this year's peak of 22.9 cents in late July after the MSP had been raised to 19.88 (May 6) and a quarterly quota system established (May 11). In November, domestic prices are just about at the 1982/83 MSP of 20.73 cents a pound. Last year in November, prices averaged 16.3 cents, and in November 1980, 39.3 cents.

The sugar program has effectively insulated domestic prices from prices abroad. The world price (Caribbean) and the New York raw price differential averaged 15 cents in the third quarter compared with 3.1 cents in the third quarter of 1981.

U.S. Sugar Prices



USDA Neg. ERS 768-82 (11)

Price spreads for sugar

Calendar year and quarter	World No. 11	Difference between No. 11 and No. 12	New York spot No. 12	Difference between No. 12 and wholesale	Northeast wholesale list	Difference between wholesale and retail	Northeast retail
<u>Cents per pound</u>							
1980							
I	20.13	1.71	21.84	8.86	30.7	1.7	32.4
II	28.18	.71	28.89	10.11	39.0	3.2	42.2
III	31.74	.90	32.64	11.36	44.0	7.8	51.8
IV	36.01	1.08	37.09	13.21	50.3	9.0	59.3
1981							
I	24.69	1.81	26.50	11.80	38.3	17.7	56.0
II	16.44	2.32	18.76	10.94	29.7	15.7	45.4
III	14.25	3.08	17.33	10.67	28.0	12.4	40.4
IV	12.35	3.99	16.34	10.46	26.8	12.0	38.8
1982							
I	12.43	5.26	17.69	10.31	28.0	10.9	38.9
II	8.17	11.33	19.50	9.50	29.0	8.7	37.7
III	6.84	14.99	21.83	10.27	32.1	7.8	39.9
IV							

Wholesale list prices for refined sugar have closely followed changes in raw sugar. The price differential between the New York spot and Northeast wholesale price has been about 10 to 11 cents in the past two years. Nearly all the change in wholesale prices can be explained by changes in the NY spot price. Wholesale prices for bulk refined cane sugar in the Northeast were 31 cents a pound in October, about 6 cents higher than last year.

Retail prices have increased slowly this year, from 32.7 cents a pound in January to 35.6 cents in September. The September price is one cent up from last year. In the Northeast, the price spread between retail and wholesale has narrowed to about 8 cents in third quarter 1982, down from 12 to 13 cents in third quarter 1981.

Retail prices of sweetener-containing products are up only slightly in 1982, largely reflecting poor market demand. The Bureau of Labor Statistics Consumer Price Index shows an average price increase of 1.6 percent for 14 sweetener-containing foods and beverages between January and September. ^{1/} Prices rose about 4.3 percent for canned and dried fruits but decreased for ice cream and related products. For seven cereal and bakery items, prices rose 1.9 percent. By comparison, the U.S. average retail price of sugar rose 7.6 percent. In 1981, prices for the 14 items increased 4.5 percent while retail sugar prices dropped 27 percent.

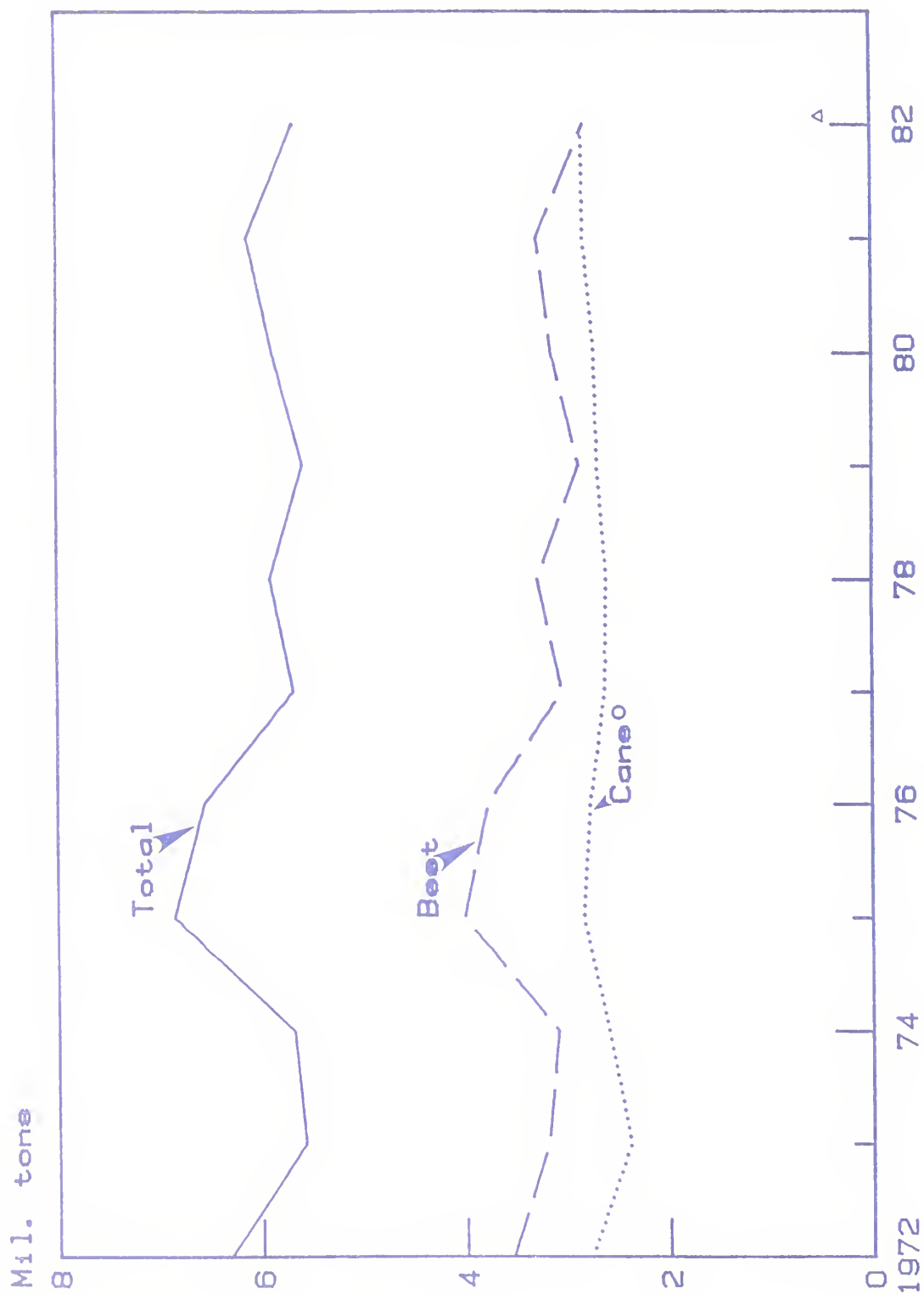
Percent change, January to September in price of sugar
and sugar-containing products, 1978-82

	: : Average of : 7 cereal : and bakery : items	: : Average of : 7 other : items	: : Average of : the 14 : items	: : Retail : sugar : price
	Percent			
1978	6.56	6.59	6.58	5.54
79	7.75	5.58	6.66	2.39
80	7.28	8.75	8.02	63.82
81	4.61	4.36	4.48	-26.84
82	1.93	1.30	1.62	7.65

Production: U.S. production of beet and cane sugar in crop year 1982/83 is estimated at 5.66 million tons (without Puerto Rico), down 7.5 percent from last season and minus 3.6 percent from 1980/81. On a calendar-year basis, 1982 sugar production is estimated at 5.7 million tons, 7.5 percent below 1981 and about equal to 1980. All of the decline in 1982/83 total output comes from beet sugar. Four significant processing facilities have shut down this year, representing a combined annual production capacity loss of 250 to 300 thousand tons of sugar (raw basis). Two small cane sugar mills in Louisiana have also been shut down.

^{1/} Measured by the simple average of the indexes for the 14 product categories.

U. S. Sugar Production, Crop Year*



*Raw value. ° Includes Hawaii. ^ Estimate.

Sugarbeet harvested area in 1982/83, estimated at 1.044 million acres, is 15 percent below last season, with California minus 35 percent and Colorado minus 39 percent. Prospective U.S. beet yields are 20.8 tons an acre, 6.7 percent below 1981/82 but still averaging above yields in the past decade. Yields are down in all producing States except Minnesota. Beet sugar production from 21.7 million tons of sugarbeets in 1982/83 is estimated at 2.8 million tons (raw basis), about 14 percent less than last season.

Sugarcane area (including seed) for harvest could total nearly 731 thousand acres in 1982/83, about 3.3 percent less than the previous campaign. Acreage is down in all four producing States--Florida, Louisiana, Texas, and Hawaii. However, cane yields are up in all four States, rising an average of nearly 9.5 percent. U.S. cane sugar output is estimated at 2.8 million tons, about the same as in 1981/82. Florida's cane sugar output is estimated at a record 1.144 million tons, nearly 19 percent above the previous year. Production could be down about 10 percent each in Louisiana and Hawaii.

Utilization: Sugar deliveries in fiscal 1982 are estimated at 9.20 million tons, down about 6 percent from 1980/81. Calendar 1982 deliveries, based on the trend for the most recent 12 months, will approximate 9.15 million tons (raw value) compared with 9.77 million last year. Most of the reduction in sugar deliveries is accounted for by the gain in the use of high fructose corn sirup, but other factors are the weak economy and possibly greater diet consciousness by the consumer. Consumption of caloric sweeteners in total may have eased slightly in 1982, from 14.41 million tons to about 14.30 million.

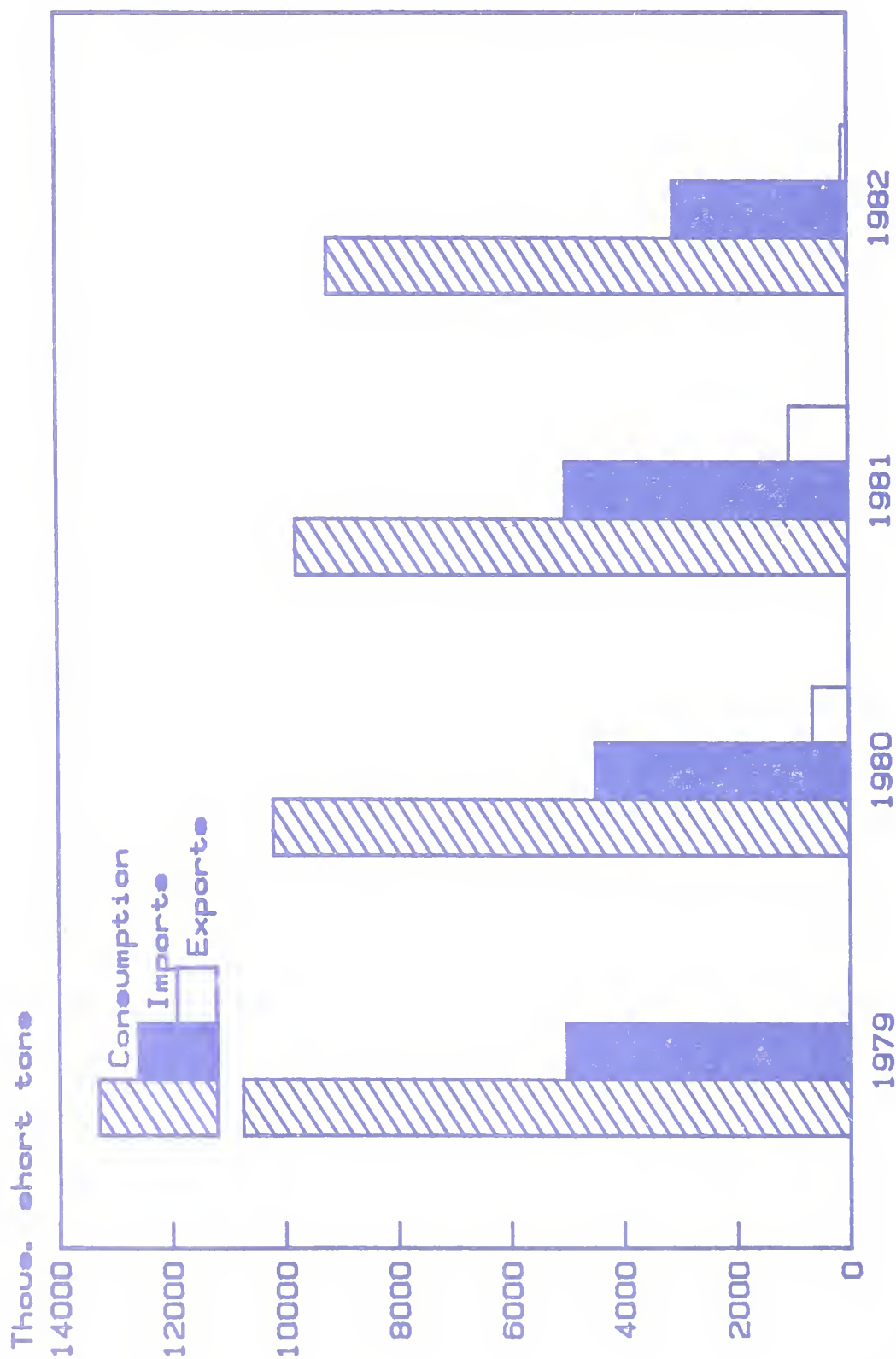
Liquid sugar deliveries, where sugar is most vulnerable to replacement by HFCS, fell about 6 percent in first-half 1982 from a year earlier. Most of the liquid sugar is for use in beverages which took 21.3 percent of all sugar deliveries in first-half 1982, down from 26 percent 4 years ago. Sugar deliveries for use in beverages (largely soft drinks) were down 17.3 percent from a year ago. Sugar deliveries also decreased for processed foods (-13.9 percent), dairy products (-13.3 percent), confectionery (-6.2 percent), bakery and cereal (-2.9 percent, and other commercially prepared food products (-5.3 percent).

U.S. consumption of refined sugar (approximated by sugar deliveries) will be about 8.6 million tons in 1982. Per capita sugar use, based on a population of 232.0 million, is estimated at 73.7 pounds, a decrease of 5.8 pounds since 1981 and 10 pounds since 1980.

Trade: Calendar 1982 sugar receipts from offshore are expected to total about 3.1 million tons, almost 2 million below 1981. January-June receipts totaled 1.68 million tons, up 24 percent from a year ago despite a quota limitation of 220,000 tons (206,000 tons actually imported) for the period May 11-June 30. U.S. imports in the third quarter were 408,315 tons, out of a quota of 420,000 tons. January-September offshore receipts of 2.23 million tons are 1.5 million below a year ago.

The shrinkage in U.S. sugar imports follows the drying up of the re-export market by over 900,000 tons in 1982 from the previous year; the further fall in consumption by over 500,000 tons, reduced stock requirements because of lower total use; and the large volume of fourth-quarter 1981 imports that were rushed ahead of 1982, in order to avoid anticipated higher duties and fees. Quotas primarily insured that prices would be close to target levels by limiting the huge world sugar surplus from flooding the U.S. market. Quotas thereby also permitted exporters to the United States a share of the higher-priced market, largely on a historical pro-rata basis.

U.S. Sugar Imports, Exports and Consumption*



*Raw value. Estimate. (1982)

U.S. exports of sugar could be only about 65,000 tons in 1982, less than 7 percent of last year's volume. Through September, exports totaled about 55,000 tons as a result of low net drawback (of previously paid duties and fees), the low premium on refined sugar, and limited markets.

Stocks: Domestic sugar stocks on October 1, 1982 totaled 1.58 million short tons (raw value), about the same as a year ago, but including an estimated 147,000 tons of overquota sugar (that is, sugar not yet "entered for consumption"). Refiners' stocks were down by 98,000 tons. Mainland sugarcane processors' stocks declined 69,000 tons while beet processors' refined sugar stocks increased 288,000 tons from a year ago. With U.S. refiners attempting to keep sugar inventories relatively low, smaller U.S. production, sharply lower imports, lower domestic utilization, and sharply smaller exports, overall U.S. stocks could decrease from a year ago by an estimated 400,000 tons next January 1, 1983, to around 2.9 million tons, the lowest level since January 1, 1976.

CORN SWEETENERS

Prices: Corn sweetener prices tend to follow sugar price trends. However, in 1982, with an overcapacity in the corn wet milling industry, prices actually declined or held steady while sugar prices rose. Dextrose prices have not changed from September a year ago; still, on a calendar-year basis, prices in 1982 seem likely to average 2-3 cents below 1981. Dextrose prices have been ranging 27-29 cents a pound, depending on marketing area.

The September price of glucose corn sirup in Chicago-West was 12.7 cents a pound (dry basis), down nearly 10 percent from January and 20 percent from September 1981. Price trends in other marketing areas showed similar change. The calendar 1982 price of glucose corn sirup in Chicago-West could average 13.5 cents a pound, down 15-16 percent from 16 cents last year.

HFCS prices have weakened the most as a result of overcapacity. In September, the Chicago-West price for 55-percent HFCS was about 18.5 cents a pound (dry basis), down 25 percent from a year ago. Prices for 42-percent HFCS have improved slightly during the summer but, at 15.8 cents a pound, are still around 28 percent lower than last year. Price discounts relative to beet sugar list prices in Chicago-West were about 34 percent in third quarter 1982 versus 16.5 percent in calendar 1981. For 42-percent HFCS, the corresponding discount was about 44 percent in third quarter 1982 versus 24 percent in calendar 1981.

Though corn sirup prices have declined, corn wet millers have been favored by lower net corn cost, about \$2.70 per 100 pounds (cwt) in September 1982 versus \$5.28 on average in calendar 1981. Prices for corn gluten feed, meal, and crude corn oil all declined in 1982 but corn prices dropped more sharply, by nearly 18 percent from January to September. The 1982/83 record corn crop of 8.32 million bushels and coupled with sluggish export and domestic feed demand point to continued low corn costs.

High fructose corn sirup price relative to sugar, Chicago-West

Calendar year and quarter	Price discount to sugar				
	HFCS-42	HFCS-55	Beet sugar	HFCS-42	HFCS-55
	Dollars per 100 lbs.			Percent	
1978	12.12	NA	18.66	35.0	NA
79	13.15	NA	19.68	33.2	NA
80	23.64	NA	38.29	38.3	NA
81	21.47	23.59	28.26	24.0	16.6
1982					
I	14.08	20.0	27.50	48.8	27.3
II	14.46	19.5	26.77	46.0	27.2
III	15.85	18.5	28.20	43.8	34.4
IV					

Production: The corn wet milling grind in 1982 is expected to total around 535 million bushels, up about 35 million from 1981. Domestic shipments of corn sweeteners for food use in 1982 are estimated at 5.6 million tons (dry basis), an increase of 9 percent from 5.15 million in 1981. Most of the increase is coming from an estimated 15 percent rise in HFCS sales this year, particularly for 55-percent-fructose HFCS. HFCS sales are estimated at around 3.1 million tons (dry basis), up from 2.7 million in 1981. Around half of HFCS sales were 55-percent-fructose HFCS, up from 40 percent in 1981. HFCS use in beverages reportedly rose nearly 40 percent to around 1.81 million tons.

The use of glucose corn sirup in commercially prepared foods and beverages is close to market saturation, and in 1982 is expected to increase only marginally to near 2.1 million tons (dry basis) from around 2.05 million in 1981. Dextrose sales have been relatively static in recent years, and dextrose shipments for food use may total around 400,000 tons, practically the same as in 1981.

Per capita consumption of corn sweeteners could total around 48 pounds (dry basis) in 1982, up about 3.5 pounds from 1981. Almost all of the increase would be in HFCS which is expected to reach around 26.7 pounds. Glucose corn sirup intake may total 18 pounds, up from 17.8 pounds. Per capita dextrose use is not expected to change from 1981's 3.5 pounds. The increase in total corn sweeteners use seems unlikely to fully compensate for the estimated loss of 5.8 pounds in per capita sugar consumption.

OTHER SWEETENERS

Honey production in 1982 could total around 220 million pounds, up from 186 million in 1981. Imports for the year are likely to be 80-85 million, exceeding last year's record imports of 77.3 million pounds. Exports are lagging last year's pace and, without a significant pickup in the last quarter, will fall short of 1981's 9.2 million. Domestic disappearance of honey is placed at around 250 million pounds, up from 225 million in 1981.

The support price for 1982-crop white honey (April 1982-March 1983) is 60.4 cents. With the support price higher than the market price, 75 million pounds have been put under loan. About 45 million pounds of the 1981 crop was forfeited to the Commodity Credit Corporation (CCC). Low import prices have undercut domestic prices and encouraged forfeitures of honey to the CCC. With large world honey supplies available, U.S. honey imports in 1983 may set another record.

U.S. pure maple sirup output totaled an estimated 1.29 billion gallons in 1982, down over 8 percent from 1981. Vermont continues as the leading state, producing 500 million gallons in 1982, down from 545 million the previous year. New York produced 320 million gallons down from 331 million in 1981. Vermont accounts for about 39 percent and New York 25 percent of U.S. production. Pure maple sirup has been selling at around \$22.50 a gallon in Maine this year, and \$17 in New York and Vermont. Last year, pure maple sirup sold for \$17.90 per gallon in Maine, \$14.20 in Vermont and \$13.10 in New York.

THE SWEETENER OUTLOOK

The 1981 Farm Act removes a major source of sugar outlook uncertainty by providing relatively assured price assumptions for growers and processors in 1982/83 through 1985/86. Still, there is considerable leeway in production decisions relative to net returns for alternative crops and, on the consumption side, the decisions by major sweeteners users on an appropriate sweetener mix.

Program levels of support for 1983/84 would appear to be stimulative to some producers and processors, and not to others. The first official USDA indication of 1983 sugarcane acreage will be in the January Crop Production - Annual report which has estimates of 1982 seedcane planted. Current expectations are that overall sugarbeet acreage in 1983 could balance out at close to 1982/83's 10.4 million acres. This takes into account the closing of the Chandler plant in Arizona, with its less than 50,000 tons a year (raw basis) production. Some growers may want to grow more beets, but processing capacity will be a limiting factor. Sugarbeet acreage could be less if there is no resolution of the contract dispute between the Great Western Company and its associated growers. Even if total U.S. sugarbeet acreage does not change much from the previous season, beet sugar output in 1983/84 is estimated to fall about 100,000 tons, to 2.7 million tons, based on a decline of yields to average levels.

Also, on the assumption of more normal yields, cane sugar output could be expected to drop by over 200,000 tons, to around 2.6 million tons. Sugarcane acreage may decline only marginally. Next year's yields are likely to fall from 1982/83's 39.7 tons an acre--3 tons above the more normal yields of the two previous seasons.

Beet and cane sugar production together would add up to about 5.3 million tons in 1983/84, 6 to 7 percent less than in 1982/83. Calendar 1983 production, derived in part from the 1982/83 output, is estimated to fall 4 percent to around 5.5 million tons below 1982.

Reflecting recent changes in the production and other estimates, the 1982/83 supply and use as of mid-November looks like this (all in thousand short tons, raw value): Output 5,664; imports 2,778 (including 35 from Puerto Rico); beginning stocks 1,578 (including 147--the difference between offshore receipts of 555.6 and 408.3 July-September charges against quota); exports 35; refining loss adjustment and residual 100; and consumption 8,800-8,900. Total supply would be 10,020; total use 8,935-9,035; and ending stocks 985-1,085. The import figure of 2,778 minus Puerto Rico differs from 2,890 by the 147,000 tons of sugar reflected in stocks but not yet "entered for consumption" and therefore chargeable to the 2,890 quota.

	FY-1981/82	FY-1982/83
	1,000 short tons	
Beginning stocks	1,576	1,578
Production	6,123	5,664
Imports	3,621	2,778
Total supply	11,320	10,020
Exports	249	35
Domestic use	9,204	8,800-8,900
Residual	289	100
Total use	9,742	8,935-9,035
Ending stocks	1,578	985-1,085

Much interest has been expressed in an arrangement to allow the import of sugar outside of quota limits, for the purpose of refining and re-export. Such an arrangement could mean perhaps a total of 6 to 7 hundred thousand tons of sugar, based on the "drawback" (rebate) of duties and fees previously paid on imported sugar, when an equivalent amount of sugar is re-exported in product or refined form. Assuming 250,000 tons of the total could be handled in 1982/83, the 250,000 would be added to the import and export sides of the S and U estimates given previously.

The New York spot price for raw sugar has been guided by three market stabilization prices in 1982--at 19.08 cents a pound, then 19.88 cents effective May 6, and 20.73 cents effective October 1. In 1983, prices will continue to be keyed to 20.73 cents until October 1 when a new MSP will take effect. Prices in 1983 are expected to average about 21.60 cents a pound compared with an estimated 20.00 cents in 1982. Wholesale prices, closely tied to the domestic raw sugar price, should average about 2 cents a pound above 1982. Retail prices are estimated at 38-40 cents a pound, compared with 40 cents in 1981 and the 1982 probable average price of 35 cents a pound.

CORN SWEETENERS

U.S. use of glucose corn sirup and dextrose will likely just keep pace with population in 1983. Consumption of HFCS in the last several years has been rising at a declining rate--30 percent in 1980, 23 percent in 1981, and an estimated 16 percent in 1982. HFCS use in 1983 will depend largely on growth of the beverage market and major company decisions to permit higher levels of replacement of sugar by HFCS.

Depending on replacement levels, and leaving aside the potential for use of aspartame in beverages, HFCS intake in 1983 could rise to 3.6 million tons (dry basis), up about 16 percent.

HFCS industry capacity utilization is estimated at about 75-80 percent in 1982. At 3.6 million tons use in 1983, capacity utilization would improve, to an estimated 85 percent. That rate allows for the addition of a new corn wet milling plant in Loudon, Tennessee which is presently producing ethanol but is planned to produce 1/2 HFCS and 1/2 ethanol in 1983.

TOTAL SWEETENER USE

Per capita caloric sweetener use in 1983 is projected to recover slightly from 1982, by about a half pound, to 123.9 pounds. A per capita maximum use of 125 pounds is assumed beginning in 1984.

Overall caloric sweeteners use is projected to rise to 14.5 million tons in 1983, a 1.5 percent recovery from 1982. The share of sugar in total caloric sweeteners use could be down to 56-57 percent in 1983, down from 60 percent in 1982 and 67 percent in 1980.

The entry of aspartame as a low caloric sweetener and the emergence of other sweetener alternatives for possible future approval by the Food and Drug Administration (FDA) opens up a vast potential for competition in a wide variety of product applications. Aspartame was introduced as an industrial sweetener in 1981 and for table-top consumer use in September 1982. Still pending is FDA approval of use of aspartame in beverages.

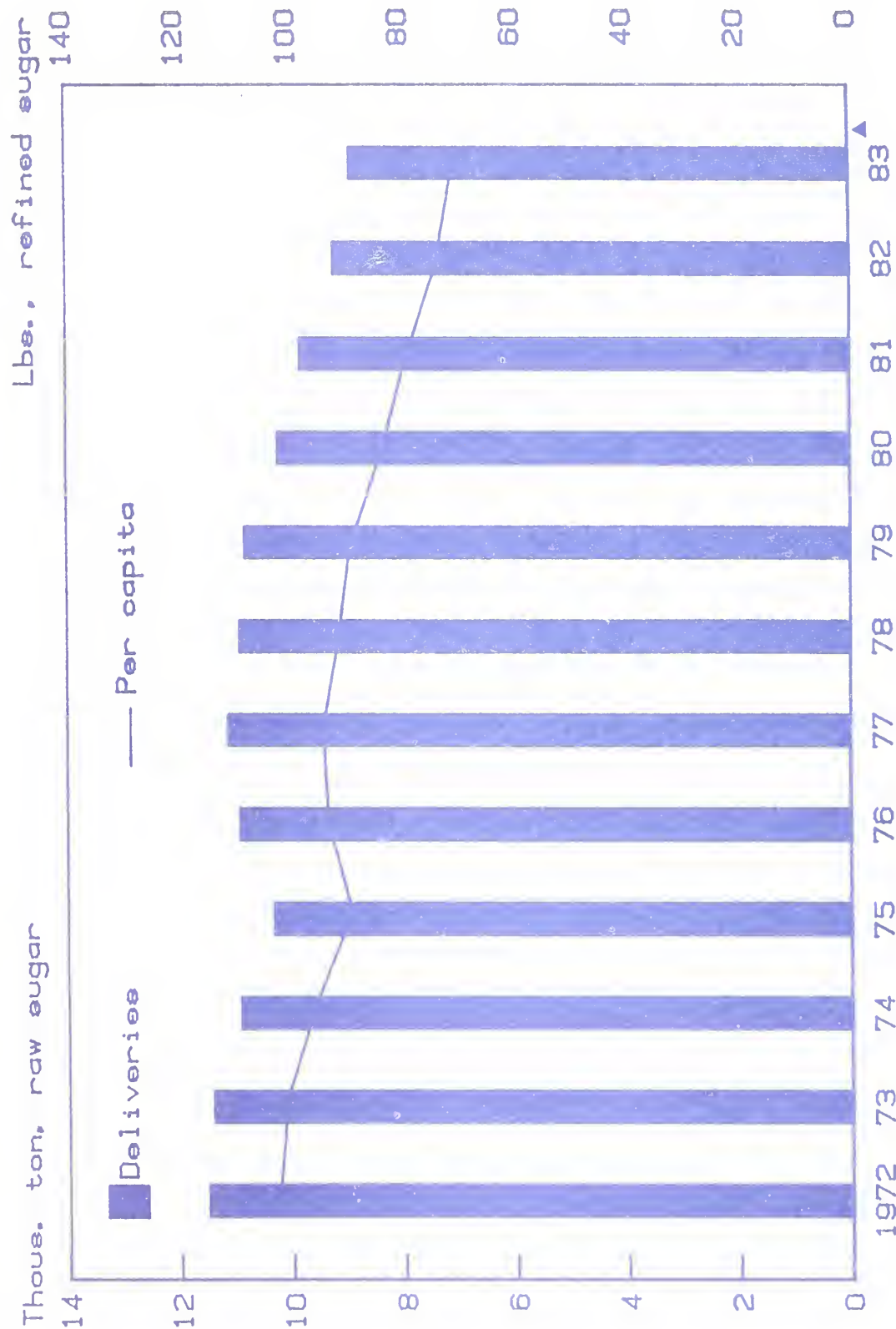
U.S. Consumption of Caloric Sweeteners

Calendar year	Refined sugar	Corn Sweeteners				Total of all caloric sweeteners 2/
		HFCS	Glucose	Dextrose	Total 1/	
<u>Pounds per capita</u>						
1975	89.1	5.0	17.5	5.0	27.5	118.0
80	83.7	19.2	17.6	3.5	40.3	125.3
81	79.5	23.3	17.8	3.5	44.6	125.5
82	73.7	26.7	18.0	3.5	48.2	123.3
83	70.2	30.8	18.0	3.5	52.3	123.9
84	68.0	34.1	18.0	3.5	55.6	125.0
85	66.1	36.0	18.0	3.5	57.5	125.0
<u>Percent of total caloric sweeteners</u>						
1975	75.5	4.2	14.8	4.2	23.3	100.0
80	66.8	15.3	14.1	2.8	32.2	100.0
81	63.4	18.5	14.2	2.8	35.5	100.0
82	59.8	21.7	14.6	2.8	39.1	100.0
83	56.7	24.9	14.4	2.8	42.2	100.0
84	54.4	27.3	14.4	2.8	44.5	100.0
85	52.9	28.8	14.4	2.8	46.0	100.0
<u>Million s.t.</u>						
1980	9.52	2.18	2.01	0.40	4.59	14.25
81	9.13	2.67	2.04	0.40	5.12	14.41
82	8.55	3.10	2.09	0.41	5.59	14.30
83	8.22	3.61	2.11	0.41	6.13	14.51
84	7.89	4.03	2.13	0.41	6.57	14.78
85	8.32	4.30	2.15	0.42	6.86	14.91

1/ May not precisely add to total of individual items because of rounding.

2/ Includes honey and edible sirups.

U.S. Sugar Deliveries and Per Capita Consumption



▲ Estimate.

OUTLOOK FOR COFFEE, TEA, AND COCOA

COFFEE

U.S. imports of coffee (green and processed) for the first 8 months of 1982 totaled 1.46 billion pounds and, at this rate, calendar 1982 imports would approximate last year's 2.25 billion pounds. The dollar value of imports will probably exceed last year's \$2.9 billion, but be considerably short of 1980's \$4.2 billion.

Domestic roastings have been estimated at 1.62 billion pounds for the first 8 months of 1982, down 3 percent from a year ago. Annual roastings, however, may be slightly below 1981's 2.32 billion pounds. With roastings exceeding imports, stocks will be reduced on January 1, 1983 from a year ago.

The composite price for the 4 major types of green coffee used mostly in roasted coffee averaged \$1.31 during January-August, up about 10 cents from the calendar 1981 average. Prices ranged from a high of \$1.40 in February to a low of \$1.25 in June. The 1976 International Coffee Agreement composite price for "Other Milds and Robustas" used largely in instant coffee, averaged \$1.24 during the first 8 months of 1982, up from \$1.14 a year earlier. The International Coffee Organization is aiming at keeping the composite price within \$1.20 to \$1.40 cents a pound, by adjusting export quotas when necessary.

U.S. wholesale prices of roasted coffee have been relatively stable since June 1981, ranging from \$2.34 in December 1981 to \$2.45 in March 1982. Prices averaged \$2.41 during January-October 1982. However, several U.S. coffee roasters have announced that wholesale prices would be increased 10 to 15 cents a pound beginning this winter.

U.S. retail prices for roasted coffee have also been relatively stable since May 1981, ranging from \$2.41 a pound in November 1981 to \$2.58 in April 1982. Prices for the first 8 months of 1982 averaged \$2.54, but are likely to follow the announced price hikes for wholesale roasted coffee.

U.S. per capita consumption of coffee in 1982 appears likely to decline slightly from 1981's 10.3 pounds (green bean equivalent). However, the long-term downtrend in per capita use, which began two decades ago when per capita use was about 16 pounds, could be slowing down.

TEA

U.S. tea imports totaled 136 million pounds (dry leaf basis) during January-September 1982, down 9 percent from a year ago. Calendar 1982 imports are expected to fall around 10 million pounds short of the 190 million imported in 1981. However, tea consumption is estimated to remain near 1982's 0.8 pounds per capita. The dollar value of imports could be around \$5 million less than 1981's \$153 million.

Retail tea prices increased only slightly in 1982. A package of 48-tea bags cost \$1.65 in New York City in September, up less than 3 percent from a year ago. Wholesale tea prices have been declining in 1982, from a high of 94 cents a pound in February (average London auction price converted to U.S. dollars) to about 80 cents a pound in July and August. With another large world crop being harvested in 1982/83, tea prices at wholesale will continue to be under downward pressure.

COCOA AND CHOCOLATE

Total cocoa imports, bean equivalent, totaled 513 million pounds for the first 8 months of 1981, down 27 percent from a year ago as manufacturers reduced stocks in a falling market. All product categories showed decreases: cocoa bean imports of 300 million pounds were down 30 percent; semiprocessed cocoa and chocolate products, at 235 million pounds (bean equivalent) fell 24 percent; unsweetened chocolate imports were down only 6.5 percent, but imports of unsweetened cocoa powder dropped 34 percent and cocoa butter fell 26 percent.

Based on 8 months of data, 1982 domestic use of cocoa and chocolate products will probably decline slightly from 1981's 821 million pounds. Per capita consumption is likely to fall to 3.3 to 3.5 pounds from 1981's 3.6 pounds (bean equivalent). The cocoa bean grind totaled 327.3 million pounds through September 1982, up 3.4 percent from a year ago, partly coming from the increase in chocolate candy bar sizes which were introduced this year by several manufacturers in response to lower cocoa prices. However, the higher domestic grind does not appear sufficiently large to offset the drop in semiprocessed cocoa and chocolate product imports.

New York cocoa bean prices (the average of the nearest-three active futures trading months on the Coffee, Sugar & Cocoa Exchange) fell from 96 cents a pound in January 1982 to nearly 70 cents in September. Cocoa prices have declined annually since 1977, but are expected to remain near current levels in 1983. World 1982/83 production is estimated to exceed consumption and raise stocks for the sixth consecutive year.

U.S. imports of cocoa and products in the first 8 months of 1982 were valued at \$460 million, down from \$655 million a year ago. The value of cocoa bean imports fell to \$235 million from \$357 million, while imports of semiprocessed and cocoa and chocolate consumer products dropped to \$225 million from \$298 million. The dollar value of U.S. imports of cocoa and products can be expected to decline from around \$900 million in calendar 1981 to within \$600 to \$700 million this year.

U.S. sugar: World and domestic prices, market stabilization price, import duty and fee,
and Presidential Proclamation authority, 1982

1982 month and date	World price 1/ :	New York spot 2/ :	USDA Market Stabilization : Price :	Import duty 3/ :	Import fee 3/ :	Total duty and fee : :	Presidential Proclamation authority for fee changes
	Cents a pound						Number
January	12.99	18.16	19.08	2.8125	2.1418	4.9543	4/4887
February	13.05	17.77	"	"	"	"	
March	11.24	17.13	"	"	"	"	
April	9.53	17.89	"	"	"	"	
April 1 April 23					3.0703 4.0703	5.8828 6.8828	5/ 6/
May	8.12	19.57	"	"	"	"	
May 6			19.88				7/4940
June	6.85	21.03	"	"	"	"	
July	7.83	22.15	"	"	"	"	
July 1 July 21					3.4193 2.4193	6.2318 5.2318	5/ 6/
August	6.80	22.45	"	"	"	"	
August 10 August 28					1.4193 0.4193	4.2318 3.2318	6/ 6/
September	5.90	20.88	"	"	"	"	
October	5.91	20.44	"	"	"	"	
October 1			8/20.73	"	0.0000	2.8125	5/

1/ F.o.b. Caribbean, Contract No. 11. 2/ C.t.f., duty/fee-paid, Contract No. 12. 3/ Based on 96-degree raw sugar. 4/ Proclamation of December 23, 1981. 5/ Quarterly adjustment. 6/ Intraquarter adjustment. 7/ Proclamation of May 5, 1982. 8/ Market stabilization price announced September 1, 1982 for the 1982/83 nonrecourse loan program.

Source: Fruits, Vegetables and Sweeteners Branch, Economic Research Service, USDA.

Dr. James Fry, Landell Mills Commodities Studies Ltd.

1983 Agricultural Outlook Conference, Session #12

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One of the occasional pleasures of the profession of economic consultancy (besides providing an excuse for attending conferences like the present one!) is that, if one is lucky, one can often identify those issues that will be a challenge and a pleasure to study, and can then persuade clients to let you get on with the task! If you cast your minds back little over 18 months, when world sugar prices were plummeting, the sort of questions that were commonly being asked related to how different sugar and HFCS producers would be affected by lower prices. Accordingly, my colleagues and I used this as an excuse for preparing a study of sugar and HFCS production costs worldwide.

That study provides a valuable understanding of the reaction of major producers to the fall in the free market world price of sugar. Now that the world price has settled at its floor and attention has turned towards the prospects for a recovery, there are three aspects of our production cost study that provide significant pointers towards the future behaviour of the sugar market. One is the identification of those exporters best placed to respond to the the opportunities opened up by the eventual recovery in the sugar price. Another is the evidence that long periods behind protective barriers have undermined the competitiveness of many traditional sugar exporters. The third is the confirmation that the protective barriers erected in support of the sugar sector have enabled the high fructose corn syrup industry to become entrenched as lower cost suppliers of sweeteners in many major markets.

If these three factors affected the outlook for sugar in a straightforward manner, there would be little intellectual challenge in making projections of the production, consumption and trade in sugar. However, for reasons that I shall try to explain, the complex interaction of production costs, shifts in end-use demand for sweeteners, and government intervention in pricing policy have served to create new opportunities for people, like myself, to embark upon another enjoyable attempt to find pointers to the future course of the sugar and sweetener sectors.

In effect, I hope to use the present paper as an opportunity to examine why the sweetener market cannot be expected to behave in line with the simple rules of textbook economics. In the process, I hope to be able to give you some insights into the issues that I believe will come to play an increasingly important role in the world sugar economy during the present decade.

The first complicating element in any analysis of the sugar market is very familiar to you in the United States. This is the rapid advance in the production of HFCS. In a totally free, unregulated world agricultural market, the evidence of our production cost study is that there exist a few countries - of which the USA is the most prominent - in which HFCS can be supplied competitively with sugar supplied by the most efficient sugar-exporting regions, such as Central/South Brazil. However, political, rather than economic, considerations have led to the rapid expansion of HFCS production, even in countries where HFCS would not appear to be cheaper than imported sugar. If one compares the domestic costs of producing sugar in places as varied as Spain, Yugoslavia, Egypt, Indonesia, Japan and Uruguay with the costs of manufacturing HFCS from the cheapest local source of starch, one discovers it becomes economic to produce HFCS purely for local consumption. In some cases, the distortions brought about by government intervention in pricing policy can be astonishing. For example, in Peru, sugar is traditionally an export crop, being produced at comparatively low cost, using irrigation systems first developed by the Incas. However, a drought forced the country to import sugar in 1980 and 1981, and led the government to approve considerable increases in the domestic wholesale prices of sugar. But, to soften the blow upon domestic consumers, the price of sugar for direct household use was raised by less than the price charged to industrial users (who are, of course, the very people who may substitute HFCS for sugar, if they find it economic to do so). At the same time, the local price for yellow maize, imported from the USA, was allowed to follow the world market price. Thus, a temporary problem affecting the sugar industry has been allowed to create a situation in which it is now more profitable to produce liquid sweeteners for soft drinks from imported maize than from local sugar, even though any medium term price projections imply that sugar ought to be preferred on economic grounds.

The impact of the distortions created by government policy extends to other sugar exporters, too. A very frequent reaction to the recent fall in world sugar prices has been for governments in sugar exporting countries to approve large increases in domestic selling prices, so as to compensate growers for the loss of export earnings. In some cases, as in Peru, industrial users suffer a larger increase than household consumers. The upshot is an artificial stimulus for the creation of a local HFCS plant.

In the first slide that I shall show you, I have estimated the historical rate of growth of HFCS production worldwide, and have added my preliminary projections of the likely rate of growth during the 1980's. In case you doubt the validity of these forecasts, I should mention that they have been prepared on the basis of a series of studies of over 30 national industrial sweetener markets that were specifically undertaken by my colleagues in order to gauge the extent of the potential market that exists for HFCS. Thus, we would like to think that the orders of magnitude of our projections are correct.

The most striking feature of the HFCS statistics is the manner in which world output is expected to achieve an average rate of growth of roughly 500,000 tonnes of sugar equivalent over the 1980's as a whole. Hitherto, the USA has accounted for a steady three quarters of global production, with Japan well behind in second place. However, the second half of the present decade will see a considerable diversification in the geographical spread of HFCS manufacture. We anticipate that the list of major HFCS producers between 1985 and 1990 will expand to include Mainland China, the Soviet Union, Mexico and the Arabian Gulf, to pull world output up to approximately 9 million tonnes, dry weight, by 1990.

The second of the influences that complicates the outlook for the sugar market is, in part, a direct consequence of the expansion in HFCS production. If we look down a list of those countries that are either major existing producers of HFCS or have the potential to become ones, the most important are the USA, Japan, the EEC, Canada, South Korea, Russia and Mainland China. These are also among the world's main importers of raw sugar. Therefore, the growth in HFCS output will cause an inevitable reduction in the rate of expansion of the trade in raw sugar worldwide.

In fact, we believe that there is a very distinct possibility that world trade in raw sugar will contract during the 1980's. With comparatively little publicity, the pattern of world trade in sugar has been transformed since the early 1970's. While exports and imports of raw sugar have edged up very slowly, the trade in refined white sugar has been leaping ahead. In the second of our slides, one can see clearly how significantly the share of refined sugar in world trade has risen: indeed, the total quantities of raw sugar entering international trade have shown negligible growth. Raw sugar exports in 1982 will probably be only 4 per cent greater than they were in 1970, while white sugar exports will have doubled in the meantime. Associated with this has been a gradual shift in the centre of power in the sugar market away from the traditional raw sugar exporters towards the exporters of white sugar, such as the European Common Market.

In our opinion, the reverberations from this change in the pattern of sugar trade will prove to be of vital importance to the whole evolution of the world sugar market in the next decade. Hence, I would like to take the next few minutes to explain why this is so.

If we return briefly to our list of major growth areas of HFCS production, the most important of them have already reached a position of virtual saturation in the per capita demand for sweeteners. Any growth in the consumption of one sweetener (such as HFCS or non-caloric sweeteners used in dietary products) will be at the expense of others. Furthermore, there is every sign that industrialised sugar-importing nations intend to maintain, and even boost, domestic sugar production. Thus the segment of the market that will be squeezed by rising local HFCS output and expanding domestic sugar beet or cane cultivation is the importation and refining of raw sugar.

When we turn, however, to the regions of rapid growth in demand for sugar, they are predominantly Third World importers of refined sugar. The contrast between the recent evolution of refined and raw sugar imports is brought out clearly by the third of my slides. (The detailed statistics of sugar trade flows are given in one of the tables included in the text of my paper.) Between 1970 and 1980, total imports of sugar by developing countries increased by roughly 140%, with the major share accounted for by refined sugar, while imports by the industrialised countries of the West fell by approximately 20 %. Particularly outstanding among areas of growth in white sugar imports into the Third World has been the upsurge in demand from oil exporting nations, which helps to explain why the slide reveals that the growth in refined sugar trade flows accelerated after the oil price boom in the mid-1970's. In Nigeria, for example, sugar consumption rose fivefold between 1975 and 1981. In the same period, the total volume of sugar imported by the traditional sugar importing nations, such as the USA, EEC and Japan, declined.

The upsurge in Third World imports is not surprising, in view of the low levels of per capita sugar consumption in many Asian and African nations. What is much more significant is the apparent preference for white sugar, rather than raw sugar imports. If this trend continues, it is quite possible that the majority of the world trade in sugar to be in a refined form by 1990.

The implications for many of the larger traditional exporters of raw sugar could be very dramatic indeed. Under the lead of Australia, who pioneered the use of large scale bulk terminals in the 1960's, the shipping of raw sugar has developed into a low cost, capital-intensive operation. With white sugar, however, bulk shipment is not possible, for fear of contamination en route. Therefore, white sugar is still exported in bags, which are costly to load and to ship, and which require comparatively labour-intensive methods of handling. The economics of white sugar exportation can thus be seen to be particularly unattractive to those cane producing nations, such as Australia, that have invested heavily in bulk terminals and which face high wage costs.

In view of the heavy burden that a continuing shift towards white sugar would impose upon raw sugar exporters, it can be expected that they will try to resist further shifts and encourage the development of portside refineries, similar to those found in North America and the Far East. However, this may not be easy to achieve. One cause for doubt is the division of Third World imports among a large number of states, many of whom are too small to possess efficient refineries to process imported raws. But the main reason for believing that the tide will continue to turn against raw sugar exporters is that the differential between white and raw sugar prices shows few signs of rising to levels that cover the full costs of the refining and bagging of cane raws.

As long as it is cheaper to buy refined sugar than it is to refine raw sugar locally, Third World importers are entirely rational to prefer to buy the refined product. Yet, can one expect that there will continue to be exporters willing to supply white sugar at what appears to be a sub-economic refining margin? Why should these exporters of white sugar continue to display an apparent indifference of the basic rules of profitable business? The answer to these questions depends upon one's analysis of the third of our three main influences upon the future course of the sugar market in the 1980's. This is the behaviour of sugar producers in the EEC and in other developed nations, including the USA and in Eastern Europe.

The most striking development in the world sugar market during the past ten years is the manner in which the EEC has been transformed from being one of the world's largest importers of sugar into its present position as the largest exporter to the free market (i.e. excluding Cuba's exports to Eastern Europe). The extent of the transformation can be seen from the details shown in this slide, and attached to the printed version of this paper. The ten members of the European Economic Community were net importers of sugar as recently as 1976, but by last year, they had become net exporters of almost 4 million tonnes, raw value, and total exports were comfortably above 5 million tonnes.

The main reasons for the upsurge in sugar output in the EEC are to be found in the protective agricultural policies pursued by the Community, which have boosted sugar beet output even in areas that could not survive as competitive producers on the world market. There are a few regions of Western Europe, notably Eastern France, in which beet production can compete without official assistance, but these are only a small minority. Sheltered by the EEC, efficient growers and factories have managed to generate exportable surpluses; and, since they are beet producers, there is little difference in cost between supplying the surpluses in the form of white, rather than raw sugar.

The EEC is by no means unique in its protective policy towards growers. The USA, with the present system of import quotas and CCC loans, is another country which supports its domestic sugar industry. Japan and Eastern Europe are other examples. In the case of Eastern Europe, there must be the possibility that their producers will try to emulate the EEC and become large exporters to the rest of the world; and, as with the EEC, being beet-based, they will be trying to export their sugar in a refined form.

The distortions caused by government policies extend beyond simple methods of subsidising local farmers. The unusual system of US import fee drawbacks, and the resultant occasional upsurges in US refined sugar exports, are equally significant at certain times in helping to give an artificial stimulus to white sugar exports despite low differentials between white and raw sugar prices on the world markets.

In the USA, by virtue of the special position of cane sugar refineries relying upon imported cane raws, it is quite conceivable that the pressures for further exports of white sugar may gradually mount. The growth of HFCS consumption in the face of virtually static overall sweetener demand will reduce the total domestic market for sugar. Moreover, within the domestic market for sugar, the share accounted for by local sugar producers will rise; therefore, there will be a considerable squeeze upon the local sales that can be made by cane refineries. One possible means of alleviating this pressure would be to encourage the refineries to divert more of their output to the export sector, and to expand tolling for overseas markets.

For traditional exporters of cane raws, the expansion of white sugar exports will be harder to achieve. There are a few exceptions: in Brazil, for example, the domestic market is so large that it is relatively simple to increase local refined output to replace raw shipments. But in many other exporters, such as Cuba, the Dominican Republic, Thailand or Australia, the refinery capacity that has been developed to supply the domestic market is far too small to leave a large surplus of unused capacity to be used for white sugar exports. Therefore, any attempt to switch their sales strategy towards refined sugar will involve them in considerable investment costs in new refining capacity.

Once this investment has been made, it might be thought that the cane sugar producers will be able to compete equally with beet producers in the export market. However, there is, as yet, one considerable factor favouring beet producers. The process of producing white sugar from beet is relatively straightforward, and the decolourising of the raw sugar is not considered technologically complex. In the case of cane sugar, the task is very much harder, and it requires separate refineries to upgrade the raws into an acceptable white quality.

Thus, unless and until the technology of cane sugar refining is improved - possibly by the development of new methods of ion exchange to enhance the recovery of sucrose from syrup - the beet producers will retain an advantage in the production of white sugar. This leaves cane producers with three unenviable alternatives: either they can soldier on as suppliers of raw sugar, and try to generate interest on the part of sugar importers in establishing sugar refineries - but, the white:raw differential is typically too low to make this an attractive prospect for potential raw sugar importers; or they can try to develop a market for plantation whites or mill whites, which at present constitute the highest quality of white sugar that they can produce without adding special refining facilities - but, to judge by the limited market that has been created for low quality Brazilian refined sugar, known as "crystal sugar", the import demand for plantation white sugar does not yet amount to even 2 million tonnes per annum; or, they can resign themselves to the inevitability of further shifts in world trade towards white sugar, and invest in new sugar refineries, in the knowledge that this will be an unprofitable investment as long as beet producers continue to make the running in determining the white:raw differential.

In any event, it seems inevitable that the next few years will see a sharp change in patterns of trade in sugar, with very harsh decisions having to be taken by many cane producers. Hence there will be a traumatic period to come for a number of traditional exporters. But, to look on the brighter side, current challenges may prove to be the spur for significant improvements in the system of sugar production and trade. Technological advances in the upgrading of raw sugar have already been mentioned. Other possible innovations may include the development of bulk shipping methods for white sugar, with special vessels designed to ensure hygienic deliveries; and another possibility is the creation of a sizeable demand for lower grade refined sugar, which can be produced without undue difficulty by cane sugar mills. Thus the next few years are likely to see changes wrought to the structure of sugar trade at least as great as those brought about by the development of bulk shipping of raw sugar in the 1960's.

Table 1:

Refined and Raw Sugar Trade in the 1970's

(all values are in '000 tonnes, raw value equivalent)

		1970	1972	1978	1979	1980
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Develop- ing country imports	:Raw sugar	1,641	1,913	2,520	2,641	3,844
	:Refined	2,490	2,437	5,537	4,928	6,004
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	:TOTAL	4,131	4,350	9,057	7,569	9,848
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Centrally planned economy imports	:Raw sugar	4,145	2,552	5,734	5,206	5,199
	:Refined	983	1,279	659	991	1,729
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	:TOTAL	5,128	3,831	6,393	6,197	6,928
	-----	-----	-----	-----	-----	-----
Developed (Western) country imports	:Raw sugar	11,016	11,557	9,519	10,275	9,047
	:Refined	1,869	2,086	1,533	1,668	1,312
	-----	-----	-----	-----	-----	-----
	:TOTAL	12,885	13,643	11,052	11,943	10,359
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Combined World Total Imports	:Raw sugar	16,802	16,022	17,773	18,122	18,090
	:Refined	5,342	5,802	7,729	7,587	9,045
	-----	-----	-----	-----	-----	-----
	:TOTAL	22,144	21,824	25,502	25,709	27,135
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Refined sugar imports as proportion of world total		24.1%	26.6%	30.3%	29.5%	33.3%

Sources: Landell Mills Commodities Studies and the Food and Agriculture
Organisation of the United Nations

Table 2:

The trend in EEC sugar trade 1975 - 1981

(all values are in '000 tonnes, raw value equivalent)

Year	Exports	Imports	Net Exports
1975	701.8	2,240.7	-1,538.9
1976	1,902.9	2,077.9	-175.0
1977	2,751.0	1,732.9	+1,018.1
1978	3,586.9	1,656.1	+1,930.8
1979	3,621.9	1,475.0	+2,146.9
1980	4,324.8	1,430.9	+2,893.9
1981	5,343.8	1,364.7	+3,979.0

Sources: Landell Mills Commodities Studies and International Sugar Organisation

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AN OVERVIEW OF FAMILY ECONOMIC MOBILITY¹

To what extent does the economic position of families change over time? The public's perception of these changes is probably one of relative stability, especially over periods of a decade or less. We seem comfortable with categories of income "classes" with their implied permanence. Although the concept of class certainly encompasses more than just a family's income level, it does convey the notion of relatively stable incomes.

Generally, families get most of their income from the labor market. Nominal wage and salary income of most workers seem to increase modestly, but persistently, over time. After adjusting for inflation, the real pay increases are sometimes positive, sometimes negative, but rarely seem to amount to more than a few percentage point gain or loss. Other sources of family income do fluctuate, but they often offset changes in labor income, as when child support or welfare payments make up for income lost when a parent departs, when unemployment benefits compensate for lost job income, or when Social Security benefits and pension payments cushion labor income lost because of retirement.

Of course, no one would argue that most incomes are completely stable. Unemployment benefits can run out and child support payments may not be paid. In addition, some occupations, especially those of the self-employed or that involve seasonal or otherwise irregular work may lead to substantial instability. Furthermore, it is easy to point to a number of families who, by their own efforts or by good fortune, have pulled themselves out of poverty, or lifted their economic status from the middle to upper middle class, or, through bad fortune or lack of effort, have suffered sharp declines in economic well-being. So while stability would seem to be the norm, some exceptions do arise.

In this paper, we take a look at the patterns and causes of change in family economic status with information from the 1971 through 1978 waves of the Panel Study of Income Dynamics. Originally funded by the Office of Economic Opportunity, and later by the Department of Health and Human Services and the National Science Foundation, the Panel Study project has monitored the economic fortunes of a representative sample of over 5000 families every year since 1968. It was originally designed to supplement and complement the regular assessment of poverty being conducted by the Bureau of the Census. It was felt that insights into factors affecting changes in family well-being would require both following the same people over an extended period of time and collecting from them a much richer mixture of economic, behavioral, and

¹This paper is adapted from an as yet untitled volume summarizing results from the Panel Study of Income Dynamics.

attitudinal information. The original design called for an atypically large fraction of low-income families, but with a complete, representative sample of families at all income levels as well. The results presented here are representative of the entire U.S. population. We chose the period from 1971 to 1978 to illustrate our general findings, a time of substantial aggregate economic volatility, although the results confirm those found for the more economically tranquil period from 1967 to 1971.²

We first compare the economic position of the population in 1971 and 1978 and find a remarkable amount of change, occurring at all levels of the income distribution. Only about half of those at the top or the bottom in 1971 remained in their relative position. More surprising, a look at growth in economic status over time shows that a majority managed to keep their incomes growing faster than inflation despite the rapid inflation and recession. We next attempt to account for these widespread changes and find that they were not well explained by differences in the personality traits or skills of the family members, nor were events such as unemployment or disability very important. The single most important type of event in accounting for changes in family well-being was fundamental change in family structure: divorce, death, marriage, birth, or a child leaving home. In other words, changes in the economic status of families are linked inextricably to changes in the composition of families themselves. Indeed, composition changes are sufficiently frequent and varied to make the very concept of a "family" ambiguous when considered in this dynamic context. These findings add to a growing body of evidence on the economic importance of the family. Taken together, these findings suggest that individuals may have more control over their economic status through decisions about marriage, divorce, procreation, or moving in with relatives or friends, than they do about seeking more work or better-paying jobs.

Although family composition changes were best able to account for changes in economic status, other events did make a difference. Movements into and out of the labor force mattered, but not as much as changes in work hours for those in the labor force continuously. The final section looks at the effects of these changes as well as the incidence and effects of a host of undesirable life events. These latter events are found to be surprisingly widespread but are not as powerful in accounting for changes in well-being as are changes in family composition.

Patterns of Change

Because the Panel Study has followed a large, representative sample of families over time, it can provide a great deal of information on the extent of short-term family economic mobility. Total family income is the most common yardstick of well-being, and it will be one of the measures used

²The 1971 to 1978 results are based on Duncan and Morgan (1981). Earlier work includes Morgan (1974) and Lane and Morgan (1975).

here.³ It does suffer from various deficiencies, however. Perhaps the major one is that it does not account for differences in family size. A family income of \$20,000 provides a much higher living standard for a family with two as opposed to six members. However, family size adjustments can be made. The federal government calculates a poverty threshold each year for families with different compositions based on the number, sex, and age of family members; in 1982 it was approximately \$2,300 plus \$1,250 per family member. The \$2,300 figure is an estimate of the "overhead cost" of maintaining a family, so that while family needs for a family of four are greater than the needs of a family with two members, they are not twice as large. Using the approximate federal formula, the poverty threshold for these two families were \$7,400 and \$4,800 in 1978, respectively. Taking into account differing family needs, a second measure of family well-being is income/needs, obtained by dividing a family's income by its poverty threshold. Income/needs is a ratio rather than a dollar amount; a value of two, for example, would indicate that a family's income is twice as high as its poverty threshold.

Thus armed with our two measures of economic well-being--family income and the income/needs ratio--it would seem a simple matter to calculate changes in them for our sample of families. But a fundamental problem arises from this exercise: how should dramatically changed families be treated? In a divorce, one family splits in two, each with its own level of family well-being, usually higher for the family of the husband than the family of the wife. Should it be counted as two families, one of which has undergone substantially more of a change in well-being than the other? If it is counted as one family, which "final" family should be chosen? The same situation presents itself in the case of an older child leaving home and setting up his or her own household. The parental family will have smaller needs and possibly smaller income, while the newly formed family of the child will be much smaller and have a much smaller income as well. Although it does make sense to compare the status of the family of the child to the status of the parental family several years earlier, this is not what we generally think of as a change in family well-being.

One possible way of handling these situations is to dismiss the radically changed families or treat them separately and restrict attention to changes in the economic status of stable families. Unfortunately, that restriction excludes a surprisingly large segment of the population. By the fourteenth year of the Panel Study, more than one-half of the families were headed by someone who had not been the head of the "same" family fourteen years before! Given such pervasive changes in family composition, the "family" becomes a very problematic concept for understanding the dynamics of change.

But while families may change beyond recognition, individuals retain their identity. At a point in time, individuals are assembled into families, can be identified by their relationship to the head of that family, and attain a level of economic well-being that can be measured by the income or income/needs of that family. Over time, families will change, but the economic

³Total family money income consists of labor market earnings of all family members, dividend, rent and interest income from financial assets as well as receipts from such transfer income sources as Social Security, welfare, child support payments, and unemployment compensation.

fortunes of each individual can be identified. Indeed, the family composition changes can be used to help account for the changes in well-being that are observed for the individuals. Thus, for dynamic analysis of family well-being, the individual is the best unit of analysis.

Extent of Change in Economic Status

A common way of illustrating the changing economic position of a population is by comparing its family income position at two points in time. This is done in Table 1 for the representative sample of individuals from the Panel Study for the years 1971 and 1978. Rather than using actual dollar amounts, Table 1 is based on family income fifths, or "quintiles." Imagine that all individuals are lined up according to their family income, with the richest families in front and the poorest at the end of the line. If there were 1,000 individuals altogether, then the 200 richest would constitute the highest income quintile, the next richest 200 would form the second quintile, and so on, all the way down to the lowest quintile, consisting of the poorest 200 individuals. In 1971, the top one-fifth received at least \$18,500, while the bottom one-fifth of all individuals lived in families with incomes below \$6,132. These are family income levels used to denote the lowest and highest family income quintiles in 1971. By 1978, inflation and real income growth had pushed the lowest and highest quintile breakpoints to about \$9,000 and \$32,100, respectively. This use of quintiles implicitly assumes that economic status is relative, rather than based on an absolute dollar amount and that a person's economic position is maintained only if his or her family income increases as much as the average percentage increase for everyone else. Later on, we will look at the actual dollar changes in well-being and at the extent to which family incomes kept up with the rapid inflation that occurred during the 1971-1978 period.

The numbers in Table 1 are estimates of the fraction of the nation's population falling into the various combinations of family income quintile positions in 1971 and 1978.⁴ The first entry, 11.1 percent, indicates that 11.1 percent of the population lived in families with incomes below \$6,132 in 1971 and \$9,000 in 1978. The "All" column on the right side of the table confirms that, by definition, one-fifth of all individuals lived in families with incomes in the bottom quintile in 1971, so that the fraction of those who ended up at the bottom is only a little over one-half ($11.1/20.0$) of those who began there. Of course, some of those moving out of the bottom quintile did not go very far, but nearly one-quarter ($4.5/20.0$) moved into the top three quintiles. These figures suggest a substantial and perhaps surprising degree of income mobility at the bottom end of the income distribution.

Income mobility was as great at the top end of the income distribution than it was at the bottom. Of all individuals living in families with incomes high enough to place them in the top fifth of the income distribution in 1971, more than one-fifth ($4.4/20.0$) had fallen into the lower three quintiles by

⁴For readers accustomed to the Census Bureau's distinction between families and unrelated individuals, it should be noted that these two groups are not distinguished here; all are considered families even though a family may consist of only one individual.

Table 1
ESTIMATED FRACTIONS OF THE POPULATION IN VARIOUS
COMBINATIONS OF 1971 AND 1978 FAMILY INCOME QUINTILES
(All Sample Individuals)

Family Income Quintile in 1971	Family Income Quintile in 1978					All
	Lowest	Fourth	Third	Second	Highest	
Lowest	<u>11.1%</u>	4.4%	1.9%	1.4%	1.2%	20.0%
Fourth	4.3	<u>6.9</u>	4.3	2.7	1.8	20.0
Third	2.7	4.7	<u>6.1</u>	3.7	2.8	20.0
Second	1.2	3.0	5.1	<u>6.3</u>	4.4	20.0
Highest	0.7	0.9	2.8	5.9	<u>9.7</u>	20.0
All	20.0%	19.9%	20.2%	20.0%	19.9%	100.0%

Table reads: "11 percent of all individuals lived in families with incomes low enough to place them in the bottom fifth of the income distribution in 1971 and incomes low enough to place them in the bottom fifth in 1978."

1978, and less than half (9.7/20.0) stayed in the top. Income position can hardly be considered very permanent if the chances of staying on top for those who begin there is only one in two.⁵ Note also that "staying on top" is defined here at two points in time separated by seven years. The fraction who are persistently in the top fifth year after year is even less.

Family income mobility is pervasive at all income levels. In all, nearly one-quarter (23.1 percent) of the sample moved at least two quintile positions in either direction, about three-eighths (36.8 percent) moved at least one, leaving two-fifths (40.1 percent) of the population in the same relative income position.⁶

Family income position is determined by the number and success of earners in the family plus receipts of asset income and transfers. Family income/needs adjusts family income for family size and would be expected to produce mobility patterns different from those of income alone if changes in family size did not accompany, on average, corresponding changes in family income. Some family composition changes decrease both needs and income (as when a child leaves home, others increase both needs and income (as when a single woman marries), while still others may increase needs and decrease income (as when the birth of a child causes the mother to reduce her market work). The net effect of these changes, however, is to produce a picture of relative income/needs mobility that is remarkably similar to the income mobility depicted in Table 1. Similar proportions remained in the same income/needs quintile (40.3 percent), moved one quintile (38.2 percent), moved two or more quintiles (23.0 percent), or moved well out of the bottom or top ends of the income/needs distribution. It is only when patterns of change in economic status for various subgroups of the population are examined that differences appear.

Accounting for Change in Economic Status

Changes in economic status are common and occur as frequently to families at the bottom and top ends of the distribution of economic status as to those in the middle. It becomes an important matter to attempt to account for these changes. What is it about the individuals or their environments that causes some to do much better than others? Many answers have been proposed to this fundamental question; the social sciences are filled with theories about the role of attitudes, skills, institutions, and demographic characteristics. Fortunately, the Panel Study data are sufficiently complete to provide a rough

⁵As shown below, income losses are much more common for some kinds of individuals (especially older children about to leave home) than others. But even among the most stable group--initially married men--the comparable chance of staying on top is less than two in three.

⁶Any error in reporting or recording income information will produce a spurious appearance of mobility. Panel Study procedures call for repeated interviews with the same respondents and often the same interviewer as well. This probably reduces the errors, as does our use of broad quintile ranges rather than exact dollar amounts. It remains likely, however, that some of the movement between adjacent quintiles is the result of this kind of error.

ordering of the importance of a host of factors in terms of their ability to account for the variety of changes in economic status that families experience. Although we won't obtain a complete understanding of, say, the way that job loss affects a family's status, we will be able to show whether involuntary job losses are sufficiently frequent and dramatic in their effects to explain more of changing family economic fortunes than moving to the Sun Belt, having a child, joining a union, or being more motivated.

Our analysis will distinguish between two types of explanatory variables--initial characteristics and events.⁷ Each family begins the period with a set of attitudes and skills. We have measures for the household head⁸ of a number of potentially important attitudes, behavior patterns, skills, and demographic characteristics. The specific measures are listed in Figure 1. There are reasons to suspect that each of these characteristics may help to distinguish those with subsequent economic success and failure.

Figure 1

MEASURES OF THE INITIAL CHARACTERISTICS OF THE HOUSEHOLD HEAD

Attitudes

Achievement motivation
Sense of personal efficacy
Orientation toward the future

Behavior Patterns

Avoidance of undue risk
Connections to sources of information and help

Skills

Years of completed education
A "test score" measure of cognitive ability

Demographic Characteristics

Race
Age

⁷The details of this analysis are given in Duncan and Morgan (1981).

⁸In keeping with accepted practices when it began, the Panel Study dictates that husbands are the heads of husband-wife families.

The second type of factors, events, may also explain why some families do better than others. Our list of events includes family composition changes, movements into and out of the labor force, births, the departure of children from their parental home, long distance residential moves, disablement, job loss and unemployment, and changes in union status. These events also play the role of "intervening" variables and may help to explain why the initial characteristics have the effects that they do. If, for example, the more highly educated individuals do better, then it is important to know which favorable events occurred more frequently for them or which unfavorable events occurred less frequently. In other words, the events may help answer the question of how education operated to produce the favorable changes in economic status.

As a measure of change in economic status, we compute an average annual growth rate in family income and income/needs and, where appropriate, in the hourly and annual earnings of the household head. The time interval chosen was the same one used earlier, 1971 to 1978, but the growth rate measures are calculated from all of the annual observations from 1971 to 1978, not just from the beginning and ending years. In addition, each dollar figure was inflated to 1978 price levels using the Consumer Price Index, so the calculated growth rate is real rather than nominal. Families with positive real growth rates did better than inflation, those with negative growth rates did worse. The size of the growth rate figure is analogous to a compound interest rate. Over a seven-year period, a ten percent real annual growth rate will double a family's real income or income/needs ratio just as a ten percent interest rate will double the amount in one's savings account in that amount of time.⁹ A five percent annual growth rate will increase a \$20,000 income to \$28,000 in seven years; a minus five percent rate will decrease that same initial income level to \$14,000.

Table 2 shows the average growth rates and their dispersion for income and income/needs for the population as a whole. Several startling facts emerge. First, despite the turbulent economic conditions of the seventies, with high inflation rates and a severe recession, slightly more than half of the population lived in families in which incomes kept up with inflation, and nearly three-fifths kept up in terms of the more comprehensive measure of economic status--income/needs. Furthermore, consistent with the picture of change shown earlier, half of the population lived in households where family incomes and family income/needs either increased or decreased dramatically (at more than a five percent real annual growth rate). With both measures of economic status, relatively modest growth rates were the exception rather than the rule.

⁹It may seem that it should take ten years of ten percent growth to double an amount. It takes fewer than ten years because, after the first year, the growth rate applies to the initial amount plus its growth, not just the initial amount alone. The "Rule of 72" is a convenient way of keeping straight the growth rates and lengths of time needed to double an amount. It states that the number of years (n) needed to double an amount of money at growth rate of r is linked by the following formula: $r \times t = 72$. Thus, if t is seven years, the growth rate needed to double an amount is $72/7 = 10\%$.

Table 2

GROWTH IN REAL INCOME AND INCOME/NEEDS, 1971-1978
(All Sample Individuals)

	Income	Income/Needs
Kept up with inflation	54%	59%
Annual real growth rate exceeded 5 percent	27	32
Annual real growth rate was between -5% and +5%	49	49
Real annual growth rate was less than -5%	24	19
TOTAL	100%	100%

Table reads: "54 percent of all individuals lived in families in which family income grew at least as fast as the rate of inflation between 1971 and 1978."

That most of the population more than kept up with inflation seems surprising, but there are several reasons why this is the case. First, many people apparently misperceive their success in keeping incomes rising with inflation. As Juster (1979) has pointed out, inflation is a continual process, visible each week at the grocery store or at the gasoline pump, while income increases occur very infrequently, often just once a year. Second, aggregate statistics indicate that per capita personal income almost kept pace with inflation--its real growth between 1971 and 1978 was negative but very small-- -.15 percent. Whether most families keep up with inflation will depend upon the distribution of individual family growth rates around the average. It is quite possible to have no real growth, on average, with a small proportion of families with large income losses (as around retirement) and a large proportion of families with modest but positive real income growth. Also over time, new families with low incomes are constantly being formed and older families with higher incomes are dying off. Moderate income increases can be quite widespread even though aggregate income per capita stays constant.

Effects of the Changing Demographic Structure of the Population

The greater success in keeping income/needs up with inflation rather than income alone suggests that, on average, family composition changes that tended to reduce needs more than income (or increase income more than needs) were more common than other kinds. And indeed this was the case. The seventies were a time of unusually low birth rates and a time when the children of the baby boom were moving out of their parental homes in record numbers. Births add to the family needs standard and decrease income (if the mother drops out of the labor force). Leaving home increases the economic well-being of family members left behind, since the departing children typically consume more than they earn. This imbalance between births and departures (which will end when the last of the baby boom children leave home) tended to increase the income/needs position of a substantial portion of the population, and resulted in more success in keeping income/needs growing faster than inflation than in keeping income alone growing faster than inflation.

The Role of Family Composition Changes

Since the early years of the Panel Study, there have been repeated attempts to gauge the relative importance of a variety of attitudes, skills, and events in accounting for changes in family economic status. All of these attempts, including this current look at the 1971 to 1978 period, have indicated that changes in the composition of families are sufficiently frequent and dramatic in their effects to be the most important. As with all sweeping generalizations, several qualifications are in order. First, the economic status of men was affected far less by family composition changes than was that of women. This results from the fact that women earn much less, on average, than men, that children typically go with the mother rather than the father after a divorce or separation, and that compensatory transfers such as alimony and child support payments are likely to be infrequent and insufficient to make up very much of the lost income. Second, the relative importance of family composition changes does not imply that other events or characteristics were totally unimportant. Quite the contrary, a number of them had substantial (and certainly statistically significant) effects on family well-being. But the ability of an event to account for changes in family well-being depends upon the size of the effect and the frequency with which it occurs. On this score, family composition change was clearly the most important.

The effects of family composition changes on changes in economic status during the 1971 to 1978 period are shown in Table 3 for the three groups that are most affected by them: adult women who began the 1971 to 1978 period as unmarried heads of their own households, adult women who were married, and young (age 1 to 14 years old) children.¹⁰ The table shows the changes in real family income levels (i.e., 1978 family income minus 1971 family income) as well as the average annual inflation-adjusted growth rates in income and income/needs associated with various family composition changes that these

¹⁰These three groups combined constitute over three-fifths of the entire population.

individuals experienced. The latter two measures were adjusted statistically for the effects of a set of demographic measures.¹¹

The first group shown on Table 3 are the women who began the period as unmarried heads of their own households. While most (80.8 percent) remained unmarried, more than one-sixth had married by the end of the period. (A very small number had undergone more complicated changes such as marriage coupled with subsequent divorce.) The difference in the financial fortunes of these two groups is striking. Those who married enjoyed inflation-adjusted family income increases that were about \$14,500 more (= \$15,357 - \$864) than those who remained unmarried. Adjusted annual growth rates in family income were also much higher (10 percent versus -1 percent).¹² Marriage increases family size and, hence, family needs as well as income so that the growth in income/needs associated with marriage was not quite as dramatic as the growth of income alone.

The economic status of the women who began the period married is equally dependent upon family composition changes, particularly divorce. Relative to women who remained married, those who divorced had a drop in real family income amounting to more than \$10,000, a 10 percent lower growth rate in income, and a 6.5 percent lower growth in income/needs. As mentioned before, many factors contribute to the devastating economic effects of divorce: married women have less regular labor force participation patterns and cannot command earnings levels that are as high as those of men; children usually go with the mother after a divorce, increasing the needs of her new family and reducing her likelihood of having a full-time job, and alimony and child support payments are inadequate to maintain an ex-wife's standard of living. On the latter point, Hoffman (1977) found that fewer than half of the divorced or separated women received any alimony or child support payments, and the average payment for those who did receive them was less than \$2,600 per year for white women and \$1,500 per year for black women.¹³

¹¹An example of the reason that statistical adjustments may be useful is in assessing the impact of becoming widowed. Family income grows much less rapidly, if at all, for elderly couples than for couples just starting out. Since becoming widowed is much more likely to occur among older persons, part of the unadjusted comparison of income growth rates of women who became widowed to those who remained married is really an age effect that has nothing to do with becoming widowed. A multiple regression that controls for initial age will adjust for these age-related growth rate differentials and give a better estimate of the "pure" effect of becoming widowed. In essence, it "forces" individuals becoming widowed to have a similar age distribution as individuals who did not become widowed, and then calculates the growth rate differentials due to widowhood as such. Age, education, and race were the measures included in the regressions to get the adjusted effects.

¹²Recall that a ten percent annual growth rate nearly doubles an amount of income in seven years.

¹³For a comprehensive review of the evidence on the economic consequence of divorce, see Espenshade (1979).

Table 3

EFFECTS OF FAMILY COMPOSITION CHANGES ON CHANGES IN ECONOMIC STATUS, 1971-1978

Group and Change	Percent of Group	Family Income		Family Income/Needs
		1978 minus 1971	Adjusted Average Annual Growth Rate	Adjusted Average Annual Growth Rate
<u>Female Heads in 1972</u>				
Remained unmarried	80.8%	\$ 864	-.9%	0.4%
Married	18.6	15,357	10.0	7.0
<u>Wives in 1972</u>				
Remained married	84.8	3,086	0.7	1.2
Widowed	7.7	-5,267	-5.4	-0.8
Divorced or separated	7.8	-7,385	-9.4	-5.3
<u>Children 1-14 years old in 1972</u>				
Parents stayed married	68.1	6,995	3.3	2.7
Child left home	9.0	-9,002	-9.2	-1.1
Parents divorced	5.3	-6,602	-8.7	-5.8
Female head remained unmarried	7.4	1,088	-0.1	-0.1
Female head married	2.0	10,521	9.4	6.9

Note: All income figures have been inflated to 1978 levels using the Consumer Price Index. Income and income/needs growth rates have been adjusted for differences in age, education, and race.

Table reads: "Of the group of unmarried women who were heads of their own households in 1972, 80.8 percent remained unmarried. For those remaining unmarried, real (inflation-adjusted) family income rose by an average of \$864..."

Women who became widowed also did worse, although the economic effects were not as strong as with divorce. Income fell substantially, but so did needs, so the income/needs growth rate for women who became widowed was only slightly negative.

Young children (age 1 to 14 in 1972) had little, if any, control over the economic fortunes of the families in which they lived, and yet family composition changes explained more of their changes in economic status than they did for any other group. Some were old enough in 1978 to have left home and formed their own households. These splitoffs suffered a substantial fall in family income but experienced only a modest reduction, on average, in income adjusted for family needs. Most of the remaining individuals were in stable families that, on average, did quite well. The real incomes of these stable families grew by about \$7,000 between 1971 and 1978; the adjusted growth in income was about 3.3 percent per year.

Children living in families where there was a divorce or separation present a very different picture by the end of the period. Even after adding in alimony, child support, and welfare payments, family incomes for them fell \$6,600, or over eight percent annually. Income/needs fell by more than half that amount. Although these children constituted only about one-twentieth of the entire group of children, their vulnerability to the effects of marital disruption is striking.

The fortunes of the remaining groups of children mirrored the experience of their elders. Those living in families in which an initially unmarried mother married did very well, especially when compared to those living with mothers who remained unmarried.

The ability of family composition changes to explain the variation in economic fortunes is shown in Table 4 for all five major demographic groups of individuals. The numbers shown there are estimates of the fraction of the variation in income and income/needs growth rates that are accounted for by changes in family composition. Thus, for adult men they explain only two percent of the variation in income growth rates and virtually none of the variation in income/needs growth.¹⁴ The economic fortunes of all of the other groups were much more dependent on family composition changes. It is rare when variables account for more than one or two percentage points of the

¹⁴Suppose all of these men either remained married or became divorced. If the income growth rate for every one of those remaining married was, say, 5 percent per year and the income growth rate for every one of the divorcees was, say, 3 percent per year, then the family composition change variable would account for 100 percent of the variation in growth rates. If the average growth rates were 5 and 3 percent, respectively, but some individuals in each group were higher or lower than average, then family composition changes would account for some but not all of the variation in growth rates. And finally, if the average growth rates for these two groups were identical, then family composition change would account for none of the variation. In a study the size of the Panel Study, a variable accounting for as little as 1 percent of the variance is statistically significant at conventional levels. The figures shown in Table 4 have been adjusted by regression for the effects of age, education, and race.

Table 4

FRACTION OF VARIATION IN GROWTH OF INCOME AND
INCOME/NEEDS, 1971-1978, EXPLAINED BY FAMILY COMPOSITION CHANGE
(Various Groups of Sample Individuals)

Subgroup	Income	Income/Needs
Male Household Heads in 1972	2.1%	0.2%
Wives in 1972	11.5	4.7
Female Household Heads in 1972	11.9	6.6
Children 15-29 Years Old in 1972	18.6	7.6
Children 1-14 Years Old in 1972	23.6	8.9

Table reads: "For the group of adult men who headed their own households in 1972, family composition changes explained 2.1 percent of the total variation in family income growth rates..."

variation in a measure like income growth, and yet, for young children, nearly one-quarter of the variation in family income growth could be explained by family composition changes; for family income/needs, the figure is about ten percent. This explanatory power far exceeds that of other events or of initial skills and attitudes.

The Economic Importance of the Family

Since our measures of family economic status depend directly on the numbers of earners and mouths to feed, the importance of family composition changes may not seem so surprising. Moreover, some may view them as common life-cycle changes that have inevitable economic consequences.

But the economic effects of family changes go far beyond inevitable events and consequences. Our analysis of the first seven years of information, for example, showed that one-third of the initially married women living in families with incomes above the poverty line who became and remained divorced were in poverty seven years later. Certainly, we would expect a reasonable system of transfer payments--including child support payments and public support for those in need--when coupled with the labor income of the ex-wives, to preserve the economic status of these women and their children better than this.

That marriage increases family economic well-being and divorce decreases it does not, of course, mean that we ought to do all we can to encourage the one and discourage the other. After all, both kinds of changes are at least partly voluntary, with one or both parties believing that the change will leave them better off in some total, if not economic, sense. But, at a minimum, it does mean that we ought not to have policies with unintended incentives or disincentives toward family composition. The "marriage tax" was the most celebrated recent example of such a policy where, until 1981, the income tax liability of relatively high-income, two-earner couples was considerably higher if they were married than if they are not. But there are other examples as well, such as the possibility that the Aid to Families with Dependent Children program may encourage divorce and discourage remarriage.¹⁵

Beyond marriage and divorce, a more general issue that permeates many tax and income support policies is the treatment of family needs and the extent to which the government attempts to recapture the economies of scale that go to large families. To illustrate these economies, recall the approximate federal poverty formula in 1982: \$2,300 plus \$1,250 per person. This standard rests on the assumption that there are economies of scale in larger families--doubling of family size does not double family needs. Often, programs gearing benefits to family needs will adjust benefit levels downward to reflect the assumption that larger families are somewhat less needy because they benefit from economies of scale. By reducing the benefits this way, the program reduces or eliminates the natural incentive for families to remain together or to come together in the first place. Of course, these incentives are not uppermost in the minds (and hearts) of most of those making such decisions. But there must be many decisions regarding the timing of the departure of children from the parental home, regarding whether elderly parents are to move in with their children or into a nursing home, and, perhaps, in some divorces and marriages as well where economic incentives do play a role. And yet many government programs attempt to capture some of these economies of scale by lowering benefits or increasing taxes for combined families relative to separate ones.

Finding that changes in family composition account for much of the change in family economic status adds to an impressive body of evidence on the economic importance of the family. Such evidence had indicated, for example, that the unpaid work done in the home by family members constitutes a substantial share of the nation's economic activity. Additional work has shown that the resources transferred within families is many times more important than governmental or private philanthropic transfers outside it.

It has long been recognized that conventional measures of aggregate economic activity such as the Gross National Product neglect the value of work done at home. This neglect has been due to measurement problems. Work performed in the labor market is rewarded with a measurable dollar payment.¹⁶ Work performed in the home, unless by a paid housekeeper, is not rewarded by a

¹⁵For a thoughtful discussion of evidence and policy consideration concerning the family, see Bane (1976).

¹⁶Some paid market work is performed in the "underground economy," and is difficult to measure in practice.

measurable cash payment. Nor is it a simple matter to assign a dollar value to it. One recent attempt used Panel Study data to estimate the dollar value of work done at home by married women and found that it exceeded 60 percent of the family's money income.¹⁷ Not surprisingly, the estimated value of child care increases with the number of children in the family. The value of housework is so great that when the wife joins the labor force, the loss of her home production is almost equal to her increased money earnings.

Families have also been found to be society's major means of redistributing income from the limited number of those who earn it to all of those who spend it.¹⁸ Some money is transferred between families directly, as when one family supports relatives outside the nuclear unit. Additional amounts are transferred when family members make private philanthropic contributions, as to the United Way. Still more is transferred, through tax payments, to recipients of various governmental transfer programs such as General Assistance or Aid to Families with Dependent Children. A comparison of the relative importance of these three methods shows that governmental transfers are many times larger than either private philanthropy or money transferal between families.

Transfers within families, however, are many times more important than governmental transfers! Morgan calculated the value of those transfers with Panel Study data by comparing the labor market earnings, dollar value of housework, and amounts from other income sources of family members to an estimate of the share of the family's resources that each family member consumes. Children, of course, are the most prominent group of recipients, while adult men, especially those between the ages of 35 and 54, are the most prominent group of donors. Women who head their own households are net donors as well, as are younger married women when the value of their housework is included. The estimated value of transfers within families in 1975 was over \$500 billion, an amount several times as large as governmental transfers in that year and nearly one-third the size of the Gross National Product. So despite the growth of government transfer programs, the family is still the most important mechanism for income maintenance.

The Unimportance of Attitudes

In explaining the changing economic fortunes of families and individuals, few propositions are more appealing than ones that stress the importance of "attitudes." Successful people are typically characterized by such adjectives as motivated, self-confident, ambitious, and driven, with the implication that these personality traits were instrumental in their success. Social psychologists have spent years trying to define, measure, and test for the effects of these concepts on a variety of outcomes, but only with several recent national longitudinal studies, including the Panel Study, have tests of their economic importance on a national, representative sample of individuals been possible.

¹⁷Gronau (1980), p. 408.

¹⁸Baerwaldt and Morgan (1973), and Morgan (1978).

Much of the evidence in support of the importance of various attitudes in determining economic success comes from cross-sectional evidence gathered at a single point in time. Typically, such data show that successful people have more positive attitudes--a result that is certainly consistent with our everyday observations. But inferring causality from such a cross-sectional association is treacherous. Did the attitudes cause the success, did the success cause the attitudes, or did something else, say educational attainment, cause both the advantageous attitude and the economic success? It is virtually impossible to disentangle the pattern of causality from cross-sectional data.

Longitudinal data, on the other hand, are much better suited to test for causality, although they still do not give definitive results. With multiple observations on the same individuals, the initial level of the attitude can be related to the subsequent economic success or failure. Do the initially poor with higher motivation have a better chance of climbing out of poverty? More generally, does the economic status of the individual or the family show more improvement for those who began with higher scores on the attitudinal measures?¹⁹ These are the propositions that can be put to test with longitudinal data.

Several attitudinal measures were included in the early Panel Study questionnaires. Here we report on the relative importance of three of them: achievement motivation, sense of personal efficacy (e.g., control over one's life), and orientation toward the future. Each of these, especially the second, has been tested for economic effects on several longitudinal data sets.²⁰

Our tests consist of relating the attitudes measured in 1972 to the growth in economic status that occurred between 1971 and 1978.²¹ Separate tests were performed for men who headed households and worked continuously during that time and for women who headed their own households in 1972. The measures of economic status common to both groups were family income and family income/needs. For the men, hourly earnings and annual labor market earnings were included as well. Changes in these measures were defined in

¹⁹Even if the evidence suggests a positive response to this question, the issue is not entirely settled. Panel data begins at a point in time and these tests neglect what might have gone on before then. Suppose that things had been going well for an individual and that he was correct in feeling optimistic about the future. This past success and correct forecast may affect positively both the initial level of attitudes and the subsequent economic success. In this case, the higher initial attitudes will be correlated with subsequent change but will not have caused them.

²⁰It is important to note that our findings on the lack of effects of personal efficacy are contradicted by the work of several authors who have used the National Longitudinal Study data. The controversy is summarized by Andrisani (1977), Duncan and Morgan (1981), Andrisani (1981), and Duncan and Liker (1981).

²¹The details of this analysis are given in Duncan and Morgan (1981).

several ways; in all there were 11 different measures of change defined for the men and five for the women.

In how many instances did those who began with more positive attitudes do better? For efficacy and future orientation, not a single one of the 32 estimated effects was statistically significant at conventional levels. For achievement motivation, there was a positive and significant effect for 1 of the 16 changes (whether female household heads kept family incomes rising faster than inflation). Given so many separate tests, this one positive result could easily be one that is found in the Panel Study sample and not in the population as a whole.

The mass of negative evidence extends far beyond these tests. We have repeatedly performed such tests over different time periods, with different concepts of change in economic status (including climbing out of poverty) and for many different subgroups in the population. We find virtually no evidence that initial attitudes affect subsequent economic success.²²

What conclusions can be drawn from this negative evidence? It is difficult to accept the notion that attitudes don't matter because personal experience seems to tell us otherwise. It would seem that there have to be some situations where individual efforts do matter--such as in seizing opportunities for better jobs, or in moving to new areas. Perhaps there are. But this evidence suggests that such occasions are either too infrequent or else matched by occasions in which those with positive attitudes did not improve or in which those with negative attitudes also did well.

Labor Force Participation

Although family composition changes are the events that provide the best explanation of the changing economic fortunes of individuals, other events do matter. Movement into and out of the labor force produces substantial increases or decreases in income, although changes in labor force status are relatively infrequent (especially for men), and the labor incomes of those remaining in the labor force often change by as much as they do for those dropping out or entering.

Movement into and out of the labor force often has substantial effects on family incomes, especially if the individual making the change is a man beginning or ending a full-time job. Hourly pay rates and work hours of working women are so much less than those of men that the average change in annual labor income accompanying the movement of women into and out of the labor force is only about \$2,000. The comparable changes for men are in the \$7,000 to \$9,000 range, on average. Although these changes may appear substantial, they are neither very common nor are they much larger than those experienced by individuals who work continuously. Of all male household heads

²²One troubling possible explanation for this negative evidence is that the attitudes are so poorly measured that they do not distinguish between those with truly different attitudes. While measurement error may be present, the fact that there is a positive association between attitudes and the level of economic status suggests that error does not dominate the results on change.

who worked in 1971, only about one-sixth were not working seven years later. Comparable fractions for initially employed wives (39 percent) and female household heads (34 percent) were considerably higher.

It is obvious that movements into and out of the labor force will be accompanied by substantial income changes, as labor income rises from or falls to zero. Surprisingly, changes in labor income for those continuously in the labor force are often quite large. Large variations in work hours are brought about by second jobs, overtime, job changes, and unemployment, making changes in labor incomes for continuously employed men the most volatile component of family income.

The Role of Various Undesirable Events

Among the many life events that can be constructed from the Panel Study data, it is important to distinguish the particularly painful ones. We have seen the adverse economic effects of divorce and widowhood. To these we can add others--major unemployment (lasting more than one month), involuntary job loss, major work loss due to illness (lasting more than one month), disability, involuntary residential moves (e.g., evictions), and a major decreased in family income (dropping by half or more). Each of these events is presumably largely involuntary and may seriously disrupt the lives of those involved. Here we show the prevalence of these involuntary events, and examine their demographic correlates.

Table 5 shows the proportion of initially married men who were affected by one or more of these involuntary events during the 11-year period from 1968 to 1978. The final row of the table gives the results for the entire group of men; the first three rows distinguish three different age subgroups.²³ Involuntary events are surprisingly widespread. Only about one-quarter of these men escaped them altogether and well over half experienced at least two. Approximately equal numbers of young and old men escaped these events altogether, although the incidence of multiple involuntary events tended to fall disproportionately among those under 60 years of age.

A look at the specific events shows many of the expected age patterns: disability and widowhood increased dramatically with age, while divorce is much more frequent among the young.²⁴ Two of the work-related events--unemployment and involuntary job change--are also concentrated among the young.

Given the surprising frequency with which these events occur, it becomes important to ask whether certain characteristics insulate individuals from

²³The full details of the age distribution as well as the incidence of these events for women are given in Duncan and Morgan (1980). Note that the age groups are not mutually exhaustive.

²⁴Disability is defined by an affirmative response to the question, "Do you have a physical or nervous condition that limits the type of work or the amount of work you can do?" Thus it does not necessarily mean that the respondent is unable to work altogether.

Table 5

FREQUENCY OF UNDESIRABLE LIFE EVENTS, BY AGE, 1968-1978
(All Married Household Heads in 1968)

Age	Proportion with at Least One Occurrence							Total Number of Undesirable Events			
	Becoming Widowed	Becoming Divorced	Major Unemployment	Involuntary Job Changes	Work Loss Due to Illness	Becoming Disabled	Involuntary Residential Moves	Major Decrease in Family Income	0	1-3	4 or More
Less than 30 years	0%	18%	37%	33%	22%	17%	25%	15%	27%	44%	29%
40-49 years	4	6	24	23	38	27	8	13	19	44	27
60-69 years	15	4	9	4	14	53	7	23	25	64	11
All	5%	9%	29%	22%	28%	30%	13%	16%	27%	48%	25%

Table reads: "None of the men who were married and were under the age of 30 in 1968 had become widowed during the 11-year period between 1968 and 1978 "

these disruptive events. Are upper income families more immune from them? Are the more educated or efficacious less susceptible? To investigate this in a rough, descriptive way, the number of involuntary events experienced by each of the married men was related to the following set of characteristics (measured in 1968): education, age, family income, savings, race, region, city size, and two attitudes--efficacy and future orientation. The results showed that the single most important characteristic was educational attainment. After differences in current income, savings, and all other variables were controlled for, those with college degrees experienced one less undesirable event, on average, than those with an eighth grade education. Furthermore, the education effect was nearly as strong among the older men as it was among younger men. What can account for this benefit from educational attainment? It is not because education leads to greater financial success; the effects of education showed up even among men with the same income and savings levels. Nor is it because the highly educated are more efficacious or oriented toward the future because differences in these measures are controlled as well. Furthermore, it does not appear as though education has only a short-term credential effect. The benefits of education were almost as strong among older men as among younger ones. It is apparently something about the skills acquired in school or possibly about the other characteristics of those who completed more schooling (e.g., perseverance, IQ) that makes better educated people more successful at avoiding undesirable life events. We tend to favor the skills explanation, since the beneficial effects of education tend to persist even after IQ and other personality differences have been taken into account.²⁵

None of the other variables were as consistently important as education in deterring undesirable life events. Families that began the study with some savings tended to be more successful in this regard, although initial income level did not seem to help much. Interestingly, blacks were no more likely to experience the detrimental events than whites once other demographic differences such as education, income, and savings were taken into account.

It is difficult to generalize about the economic consequences of events other than changes in family composition and labor force status. These consequences often differed between young and old, blacks and whites, and other demographic divisions of the population and on the time period over which the events and outcomes were measured. But while many of these other events do have a dramatic impact on some families, none of them appears to account for as much of the fluctuating fortunes of the nation's families as changes in family composition.

Summary

The economic well-being of individuals fluctuates markedly over time, lifting many out of the lower end of the income distribution and displacing many from the top. By far the most important cause of change is change in family composition--births, deaths, children leaving home, and especially divorce and marriage. The economic status of young children and adult women

²⁵See Juster (1976) for a diverse yet thorough analysis of the effects of education on a wide variety of economic outcomes.

is particularly sensitive to the effects of divorce and remarriage. The prevalence of family composition changes makes the very definition of a "family" ambiguous over time and reinforces growing evidence on the economic importance of the family.

Aside from family composition changes, movements into and out of the labor force, especially by men, produce substantial changes in family well-being. However, strikingly large changes in work hours and earnings were also found for those who worked continuously. A stable, full-time job of fifty 40-hour weeks characterizes very few of the adult labor force.

Although those at the top end of the income distribution at a point in time do have more positive attitudes, we found little support for the proposition that those with more positive attitudes have more favorable subsequent changes in economic status.

The general picture of family economic mobility, then, is one of substantial yet undirected change. Events causing the changes are often involuntary ones. On the whole, however, more than half of the population lived in families that kept incomes rising faster than inflation during most of the 1970s. There was even more success in keeping up when family incomes were adjusted for family size, because low birth rates combined with large numbers of children splitting off left many families better off.

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1983 Agricultural Outlook Conference, Session #14
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It is my function, today, to present the USDA's view of the outlook for the World Oilseed sector for 1982/83. I should say at the outset that the numbers and analysis that go into this outlook are the joint product of many people and agencies in USDA, including the World Board, ASCS, ERS, and FAS. I should also say that I have no new numbers to present today. We began publishing detailed forecasts for the 1982/83 season last July, and these forecasts are updated monthly. What I will do is to summarize some of the key numbers and bring out some of the key factors and assumptions which are shaping the outlook this year.

At last year's Outlook Conference, I summarized the expected U.S. trade situation by saying "we are forecasting an almost across-the-board increase in exports of U.S. oilseeds and oilseed products in 1981/82, but with lower prices the total value of exports of our commodity group may only about equal 1980/81. Demand is weak, and the increase in exports (and in world consumption) will have to be bought with lower prices."

That forecast turned out to be generally correct. Exports of U.S. oilseeds and products totaled \$9.7 billion in FY 1982, up 3.5 percent from 1981. Of course, the individual elements did not turn out exactly as forecast. In particular, we underestimated U.S. soybean exports--largely because we did not get as much competition from South America as expected--and, we overestimated oil exports and prices--largely because we did not correctly assess the weakness of demand (world oil production was forecast accurately).

Another indication that we did not assess the demand situation accurately is that in spite of the fact that we overestimated world oilseed production, and actually got a drawdown of both soybean and soybean oil stocks instead of the forecast buildup, prices for both soybeans and soybean oil turned out to be below our forecasts.

I spend this time talking about last year for two reasons. First, I believe we must do a better job of analysis of demand factors. Most of the situation and outlook work in USDA has traditionally emphasized the supply side. This was o.k. in the 1970's when demand grew regularly and most of the year-to-year variation that determined fluctuations in trade and prices was in supply factors. But, in the last two years the demand side has become painfully important. World demand is weak in general, and this situation is exacerbated by extreme shortages of foreign exchange in many of the most promising developing markets of the 1970's. The supply factors are still as significant as ever, but now, demand factors are equally important. We plan to improve our capacity to incorporate analysis of demand factors in our situation and outlook work in the coming year.

Second, the outlook for the world oilseeds sector in 1982/83 is essentially a repeat of last year. We are looking at record world production of oilseeds and related products, and continued weak demand. This will lead to a situation of lower prices and a buildup of stocks--particularly of soybeans. U.S. exports of most oilseeds commodities are forecast to hold near last year's levels, but lower prices will pull the value of exports from our commodity sector down about 8 percent to about \$8.9 billion.

Now, let's look at some of the details.

Table 1 summarizes world, U.S., and foreign production of total oilseeds and soybeans, and the potential meal and oil equivalent production of oilseeds plus related products such as fishmeal and oil, tree crop oils, and animal fats. The years do not relate to any single twelve month period, but are a summation of various local marketing years focused on the marketing year for U.S. soybeans. For example, the 1983 South American soybean crop--to be harvested next spring--is included in 1982/83 world soybean production. Tree crop oils--palm and coconut--are calculated on a calendar year basis, with production included for the second year of the split year shown.

For 1982/83, we are forecasting record world production of oilseeds at 184.9 million metric tons; 13 million tons or 7.6 percent more than last year and 10 million tons more than the previous record in 1979/80. World soybean production is expected to account for most of the increase, up 14.5 percent from last year to a record 97.6 million tons. Since soybeans are a relatively low oil-content oilseed, the increase in world potential meal equivalent production will be higher than the potential increase in fats and oil production--9.3 percent versus 6.7 percent, respectively--in spite of expected increased production of palm oil. I should point out that these are still production forecasts. Compared with today's numbers, at last year's Outlook Conference we overestimated world oilseeds production by 2 percent and world soybean production--both U.S. and foreign--by 5 percent.

The U.S. accounts for nearly two-fifths of world oilseed production and for nearly two-thirds of world soybean production. Since soybeans and products are the most important oilseed traded internationally, and since the U.S. is forecast to export 55 percent of the 1982 soybean crop (including the bean equivalent of soybean meal exports), the U.S. is the primary factor in world oilseeds and protein trade. But, since soybeans are relatively low in oil content, the U.S. is a much less important factor in the world market for fats and oils.

Table 2 summarizes our forecasts of the world soybean supply, and meal and oil consumption.

The two fastest growing major areas of foreign soybean meal consumption are now the EC and the USSR. Growth in other major areas--Eastern Europe, Mexico, and Brazil--has slowed or reversed in the last couple of years because of economic difficulties and, in the case of Brazil, rationalization of the internal pricing structure.

In the EC, the increase in soybean meal consumption is predicated largely on a falling soybean meal/grain price ratio. Because of the Common Agricultural Policy, changes in world prices of oilseeds and products are passed through to EC consumers, but changes in world prices of grains are not. The soybean meal/corn price ratio at Rotterdam has fallen from 1.14 in 1980/81 to 1.00 in 1981/82, and is forecast at 0.82 in 1982/83. In the U.S., this ratio is about 2.0 to 1.

In the USSR, the increase reflects an apparent recognition on the part of the Soviets of the need to increase the protein content of livestock feeds to improve livestock production efficiency.

For oil, we expect continued steady growth in consumption, particularly in the developing countries where it is related to population growth. Palm oil is making sharp inroads in these markets right now, but we expect this to taper off as the sharp increase in palm oil production relative to year earlier levels declines as we get into 1983.

Table 3 shows world soybean trade and crush. The trade data in the table are net of EC intra-trade. South American trade (Brazil, Argentina, and Paraguay) is also shown on a net basis. Brazil is now importing more than a million tons per year, mostly from her neighbors, to fill excess crushing capacity.

World soybean exports increased nearly 4 million tons last year, and the U.S. share increased from 82 to 91 percent, with larger crops now expected in South America, we expect the U.S. share to fall back some this season.

We don't expect world soybean trade to expand as rapidly in 1982/83 as in 1981/82. With larger EC oilseed crops and strong competition in world oil markets, we expect the larger EC demand for meal to be satisfied largely with expanded meal imports, with a consequent relative shift in crush from the EC to the U.S., in particular, and to Brazil, and a following relative shift from trade in beans to trade in meal.

We expect a sharp increase in imports of soybeans by Mexico, to offset smaller domestic crops.

We expect world trade in soybean oil to continue to be relatively flat.

Table 4 shows the trade picture for soybean products. The data are shown net of EC intra-trade.

Table 5 summarizes the world situation for soybeans and products in terms of stocks and prices.

We are forecasting a sharp buildup in stocks of soybeans in 1982/83 to a record world level of 20.4 million tons--equal to 3.1 months of crush at the 1982/83 forecast crush rate. Most of the stock buildup will be in the U.S.

Heavy stocks of oil which the trade built up in 1979/80 and 1980/81 have largely been worked off, and are expected to stay at more nearly "normal" levels in 1982/83. With interest rates still high and with plentiful supplies of competing oils, the trade is not likely to build oil stocks in 1982/83.

Table 6 gives a bit more detailed look at the vegetable oil situation.

World potential vegetable oil production is expected to increase 4 million tons in 1982/83 compared with 3 million tons last year, but actual output will be less than this reflecting the expected increase in stocks of soybeans.

World production of palm oil is increasing nearly 1 million tons this year. Rapeseed production is up sharply in the EC and Canada, and sunflowerseed production is up sharply in Argentina and the U.S.

We expect a smaller increase in palm oil production in 1983, but larger stocks will keep supplies plentiful. The larger EC rapeseed (and sunflowerseed) crop will put pressure on the EC demand for soybean oil (and soybeans), but will also mean less competition for U.S. crushers of sunflowerseed.

This year's larger Canadian rapeseed crop is offset by reduced carryin stocks, and the crop is reported to be of relatively low quality.

Total exports of vegetable oil from the U.S. are expected to be about the same as last year, with some increase in sunflowerseed oil exports about offsetting the reduced availability of cottonseed oil.

Most of the increase in U.S. exports of soybean oil in 1981/82 went to Pakistan, mostly under PL-480 or CCC Credit programs. These government programs play a very important role in U.S. exports of soybean oil, with 416,000 tons or nearly half of U.S. exports covered by PL-480 or CCC credit in 1981/82.

Table 7 summarizes the U.S. production and export picture for sunflowerseed, sunflowerseed oil, cottonseed oil, and peanuts.

U.S. exports of sunflowerseed have been shifting from the EC to other markets, particularly Mexico. Larger production of soft seeds in the EC, and strong demand in Mexico largely account for this shift. The large shipments of sunflowerseed to Spain last year were due to failure of the Spanish crop.

As pointed out earlier, much of the increase in U.S. production of sunflowerseed is expected to be crushed domestically, with much of the increase in oil production going into export. This should about offset the reduced availability of U.S. cottonseed oil this year.

Although only about one-third the level of soybean oil exports, exports of cottonseed oil are extremely important to the industry as more than half of U.S. production normally is exported. Furthermore, the market is very narrow, with 80 percent or more of exports accounted for by just the four countries shown in the Table.

U.S. peanut exports are recovering slowly from the disaster of 1980, but still have quite a way to go to return to the levels--and the promising prospects--of the late 1970's. The short supplies and sharply higher prices in 1980/81 both stymied demand and brought new competition--particularly China--into the market. Recovery is proving to be slower than was anticipated a year ago.

Table 1
World and U.S. Oilseeds and Products Production 1/: 1979/80-1982/83
(In Million Metric Tons)

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
World Oilseeds <u>2/</u>	174.2	158.6	171.9	184.9
U.S. Oilseeds <u>3/</u>	72.7	55.9	64.4	71.4
Foreign Oilseeds <u>2/</u>	101.5	102.6	107.5	113.5
World Soybeans	93.8	80.7	86.2	97.6
U.S. Soybeans	61.7	48.8	54.4	62.6
Foreign Soybeans	32.1	32.0	31.8	35.0
World Meal Equivalent <u>4/</u>	96.1	85.3	91.3	99.8
U.S. Meal Equivalent <u>4/</u>	50.1	39.2	44.4	50.0
Foreign Meal Equivalent <u>4/</u>	46.0	46.0	47.0	49.8
World Oil Equivalent <u>5/</u>	59.1	56.3	59.3	63.3
U.S. Oil Equivalent <u>5/</u>	17.4	14.3	15.7	16.9
Foreign Oil Equivalent <u>5/</u>	41.6	42.0	43.6	46.4

1/ Estimates at mid-November, 1982.

2/ Soybeans, cottonseed, peanuts, sunflowerseed, rapeseed, sesameseed, safflowerseed, flaxseed, castorbeans, copra, palm kernel.

3/ Soybeans, cottonseed, peanuts, sunflowerseed, safflowerseed, flaxseed.

4/ 44 percent protein equivalent of oilseeds plus fish meal.

5/ Fat content of oilseeds plus marine oils and animal fats.

Table 2
Soybean Supply and Product Use, World and Selected Countries: 1979/80-1982/83
(In Million Metric Tons)

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
<u>Soybean Supply</u>				
World	102.5	98.0	101.7	112.2
U.S.	66.5	58.5	63.1	69.9
Brazil and Argentina	21.2	24.1	21.7	24.4
<u>Meal Consumption</u>				
World	58.1	56.3	58.2	61.6
U.S.	17.4	16.0	16.1	16.4
Foreign	40.6	40.4	42.1	45.2
EC	15.3	14.9	16.1	17.2
Japan	3.0	2.9	2.8	2.9
Eastern Europe	5.2	5.1	4.1	4.3
USSR	1.4	2.0	2.3	2.8
Mexico	1.1	1.2	1.3	1.3
Brazil	2.4	1.7	1.5	1.6
<u>Oil Consumption</u>				
World	12.4	12.7	13.1	13.7
U.S.	4.1	4.1	4.3	4.4
Foreign	8.3	8.6	8.8	9.3
EC	1.6	1.5	1.5	1.5
Brazil	1.4	1.4	1.6	1.6
India	.8	.7	.5	.7
Eastern Europe	.5	.4	.4	.5
USSR	.3	.3	.4	.5
<u>Decatur Prices</u>				
Soybean Meal, 44%, (\$/st.)	182	218	182	160
Soybean Oil, Crude (¢/lb.)	24.3	22.7	19.0	18.0

Chart I

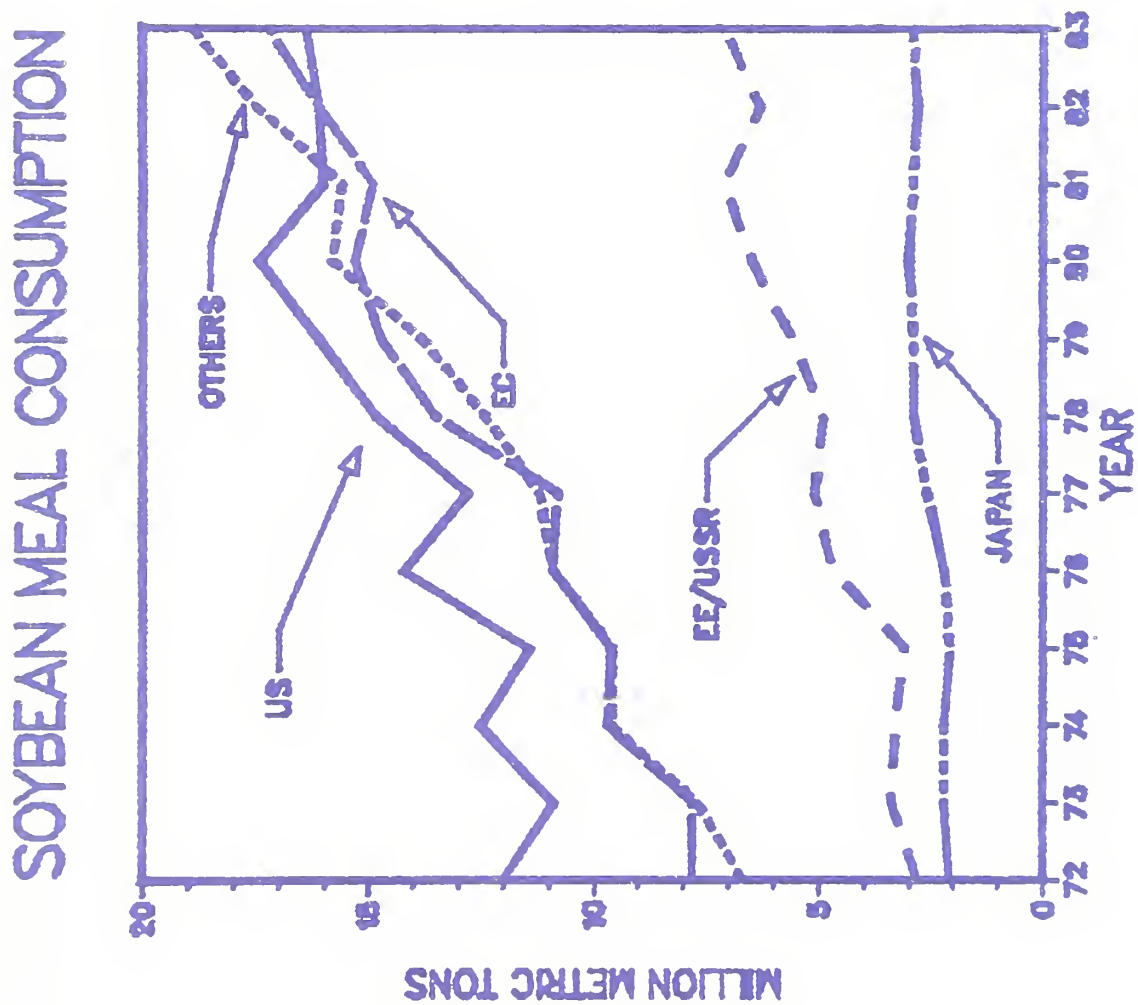


Chart II

SOYBEAN MEAL/CORN PRICE RATIOS US and EC

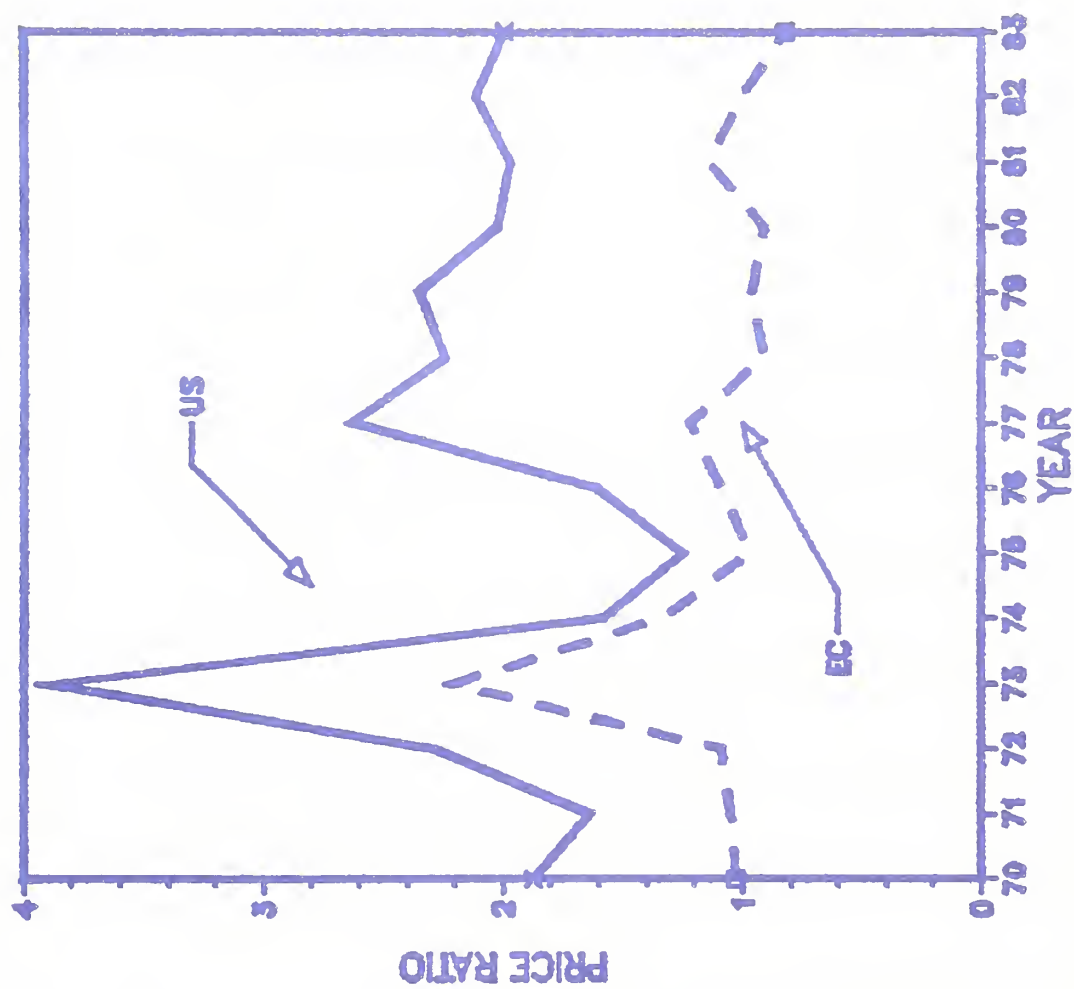


Chart III

SOYBEAN MEAL CONSUMPTION: US, EC, and JAPAN

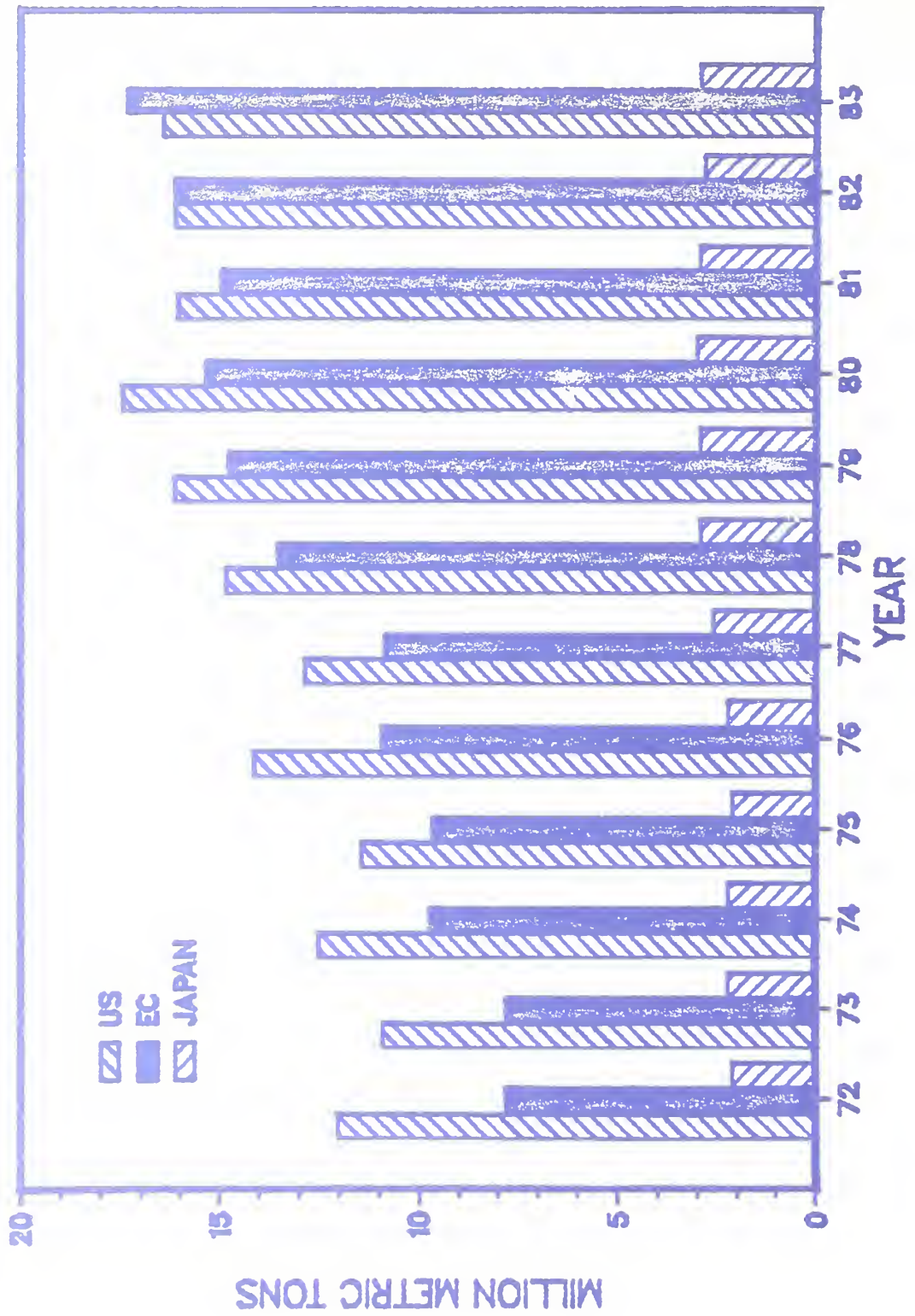


Chart IV

GRAINS FED TO LIVESTOCK: US, EC, and JAPAN

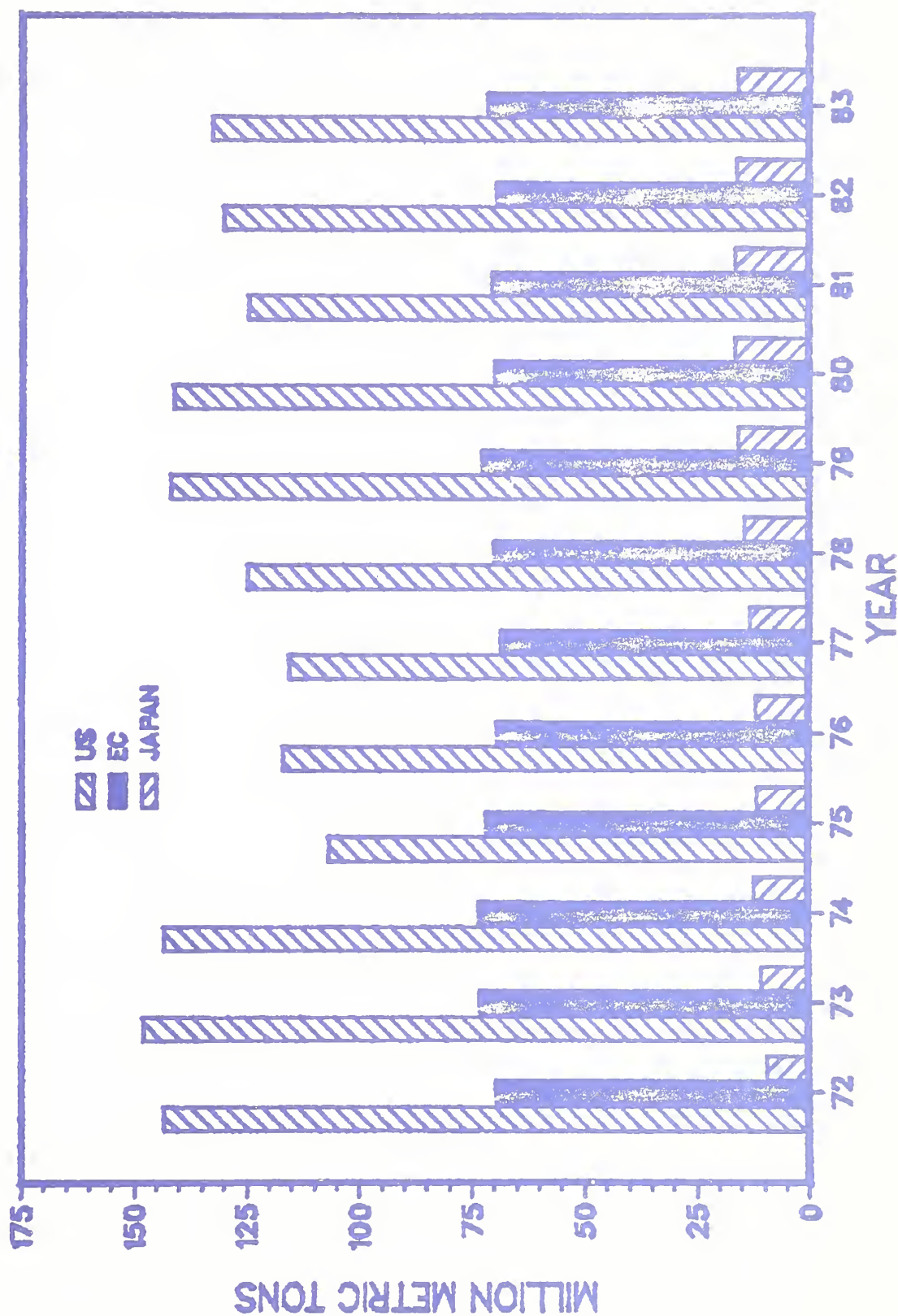


Table 3
Soybean Trade and Crush, World and Selected Countries: 1979/80-1982/83
(In Million Metric Tons)

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
<u>World Exports</u> <u>1/</u>	27.8	23.9	27.8	29.1
U.S.	23.8	19.7	25.3	25.6
Argentina, Brazil <u>2/</u> , and Paraguay	3.7	3.9	2.1	3.1
<u>Selected Imports</u>				
EC <u>2/</u>	11.9	10.4	11.7	12.0
Japan	4.4	4.2	4.3	4.4
Spain	3.1	2.8	3.2	3.4
USSR	1.1	1.4	1.5	1.8
China	.8	.5	.5	.4
Mexico	.8	1.4	.6	1.1
<u>World Crush</u>	72.3	71.8	73.4	78.0
U.S.	30.6	27.8	28.0	29.7
EC	11.5	10.3	11.4	11.6
Brazil	10.6	13.8	12.4	13.2

Farm Price

U.S. Soybeans (\$/bu,)	6.28	7.57	6.08	5.40
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1/ Net of EC and Brazil.

2/ Net.

Table 4
Soybean Product Trade, World and Selected Countries, 1979/80-1982/83
(In Million Metric Tons)

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
<u>World Soybean Meal Exports 1/</u>	13.7	15.9	16.4	17.4
U.S.	7.2	6.1	6.3	7.1
Brazil	5.5	8.6	8.5	8.4
<u>Selected Soybean Meal Imports</u>				
EC 2/	5.9	6.7	7.0	8.0
Spain	.1	.1	.1	.2
Eastern Europe	4.0	4.2	3.2	3.3
USSR	.4	1.0	1.2	1.5

<u>World Soybean Oil Exports 1/</u>	2.7	3.0	3.0	3.1
U.S.	1.2	.7	.9	.9
Brazil	.5	1.3	.9	.9
EC 2/	.4	.4	.5	.5
Spain	.4	.4	.4	.5
<u>Selected Soybean Oil Imports</u>				
India	.66	.65	.40	.55
Pakistan	.21	.23	.25	.26
Mid-East	.64	.73	.69	.76
Latin America	.35	.48	.49	.52
USSR	.05	.10	.20	.18
Eastern Europe	.20	.21	.24	.24

1/ Net of EC trade.

2/ Net.

Table 5
Soybeans and Products Stocks and Prices: 1979/80-1982/83

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
<u>Stocks</u> ^{1/} (million metric tons)				
<u>World Soybeans</u>	17.3	15.5	14.6	20.4
U.S.	9.8	8.7	7.3	12.2
Brazil and Argentina	5.4	4.9	5.4	6.3
- - - - -				
<u>World Soybean Oil</u> (million metric tons)	1.58	1.70	1.37	1.33
U.S.	.55	.79	.50	.50
Brazil	.37	.28	.20	.16
- - - - -				
World Soybean Stocks Expressed as months of crush	2.9	2.6	2.4	3.1
World Soybean Oil Stocks Expressed as months of consumption	1.5	1.6	1.3	1.2
- - - - -				
<u>Prices</u>				
U.S. Soybeans, farm, (\$/bu.)	6.28	7.57	6.08	5.40
Soybean Meal, Decatur, (\$/st.)	182	218	182	160
Soybean Oil, Decatur. (¢/lb.)	24.3	22.7	19.0	18.0

^{1/} End of year.

Table 6
Vegetable Oil Situation: 1979/80-1982/83
(In Million Metric Tons)

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
<u>World Oil Equivalent Production</u>	59.1	56.3	59.3	63.3
Other than Soybean	44.7	44.1	46.4	48.5
Potential Soybean	14.4	12.2	12.9	14.7
Actual Soybean	12.8	12.8	12.9	13.7
<u>Competing Oil Crops</u>				
World Palm Oil	4.8	5.2	6.1	6.5
World Coconut Oil	3.1	3.1	3.1	3.2
Canada Rapeseed	3.4	2.5	1.8	2.1
EC Rapeseed	1.2	2.0	2.0	2.6
Argentine Sunflowerseed	1.6	1.3	1.8	1.9
U.S. Sunflowerseed	3.5	1.8	2.1	2.5
<u>U.S. Vegetable Oil Exports</u>				
Total	1.816	1.577	1.621	1.662
Soybean	1.220	.739	.942	.942
Cottonseed	.330	.322	.384	.322
Sunflowerseed	.086	.301	.103	.180
Corn	.064	.082	.092	
Peanut	.009	.025	.015	.015
<u>U.S. Soybean Oil Exports to Major Markets</u>				
Brazil	.076	0	.006	
Other South America	.179	.220	.207	
North America	.133	.121	.181	
India	.428	.062	.068	
Pakistan	.147	.126	.260	
China	.100	.026	0	
Eastern Europe	.004	.042	.026	

Table 7
U.S. Exports of Sunflowerseed, Sunflowerseed Oil, Cottonseed Oil,
and Peanuts: Marketing Years 1979/80-1982/83
(In Thousand Metric Tons)

	<u>1979/80</u>	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>
<u>Sunflowerseed (Sept.-Aug.)</u>				
Production	3,409	1,748	2,098	2,547
Exports	1,821	1,505	1,555	1,500
EC	1,247	945	542	
Portugal	221	225	176	
Mexico	198	272	620	
Spain	--	1	145	
<u>Sunflowerseed Oil (Oct.-Sept.)</u>				
Production	224	298	137	315
Exports	86	301	103	180
EC	4	62	1	
Venezuela	33	89	31	
Algeria	12	80	5	
Egypt	10	43	3	
USSR	0	0	41	
<u>Cottonseed Oil (Oct.-Sept.)</u>				
Production	645	542	710	594
Exports	330	322	384	322
Venezuela	72	109	91	
Egypt	157	76	156	
Japan	23	40	41	
Dominican Republic	28	33	27	
<u>Peanuts (Aug.-July)</u>				
Production (In-shell)	1,800	1,044	1,809	1,557
Exports (Shelled basis)	360	172	196	250
EC	204	101	106	
Canada	65	31	44	
Japan	30	13	16	

Chart V

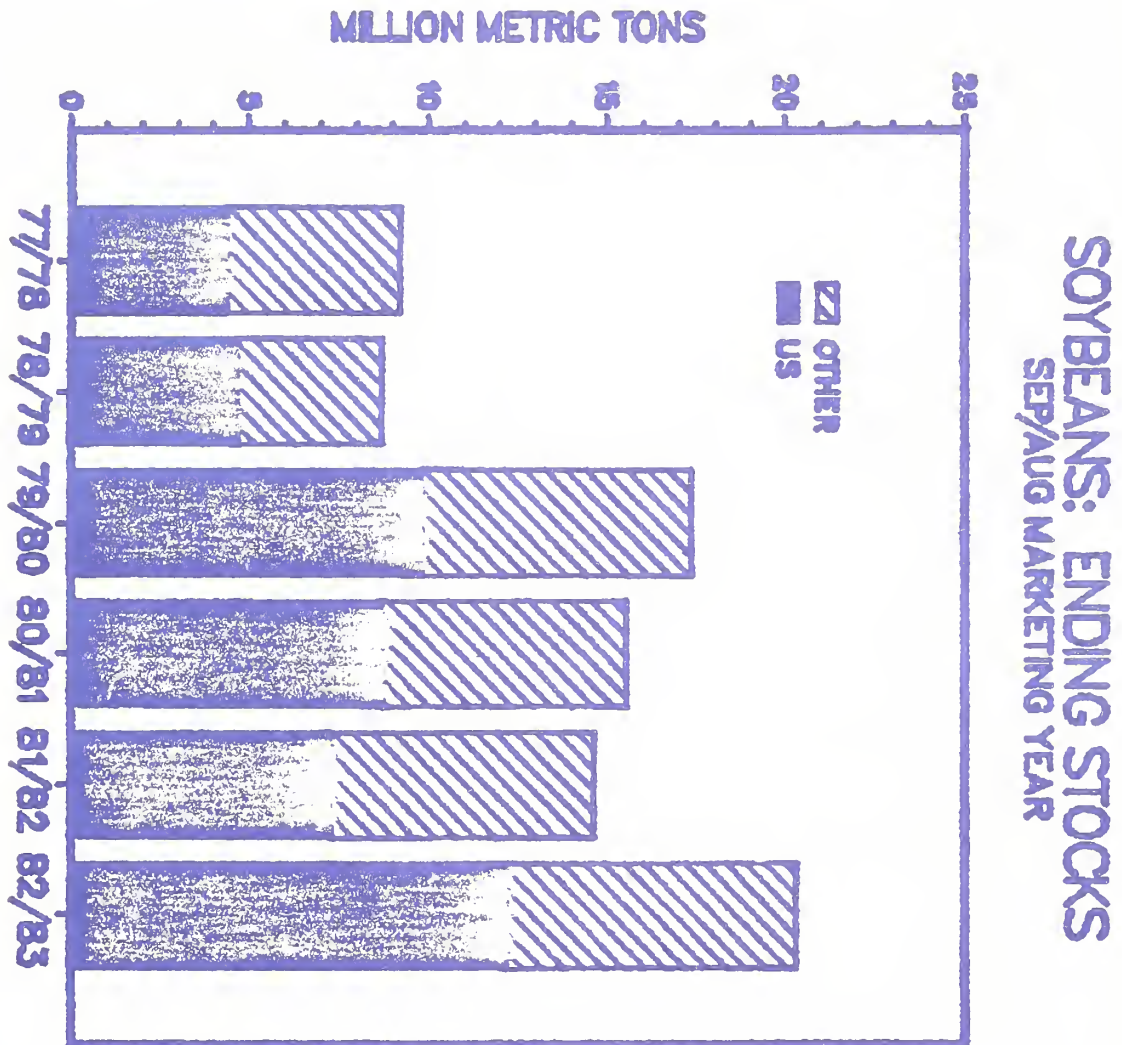
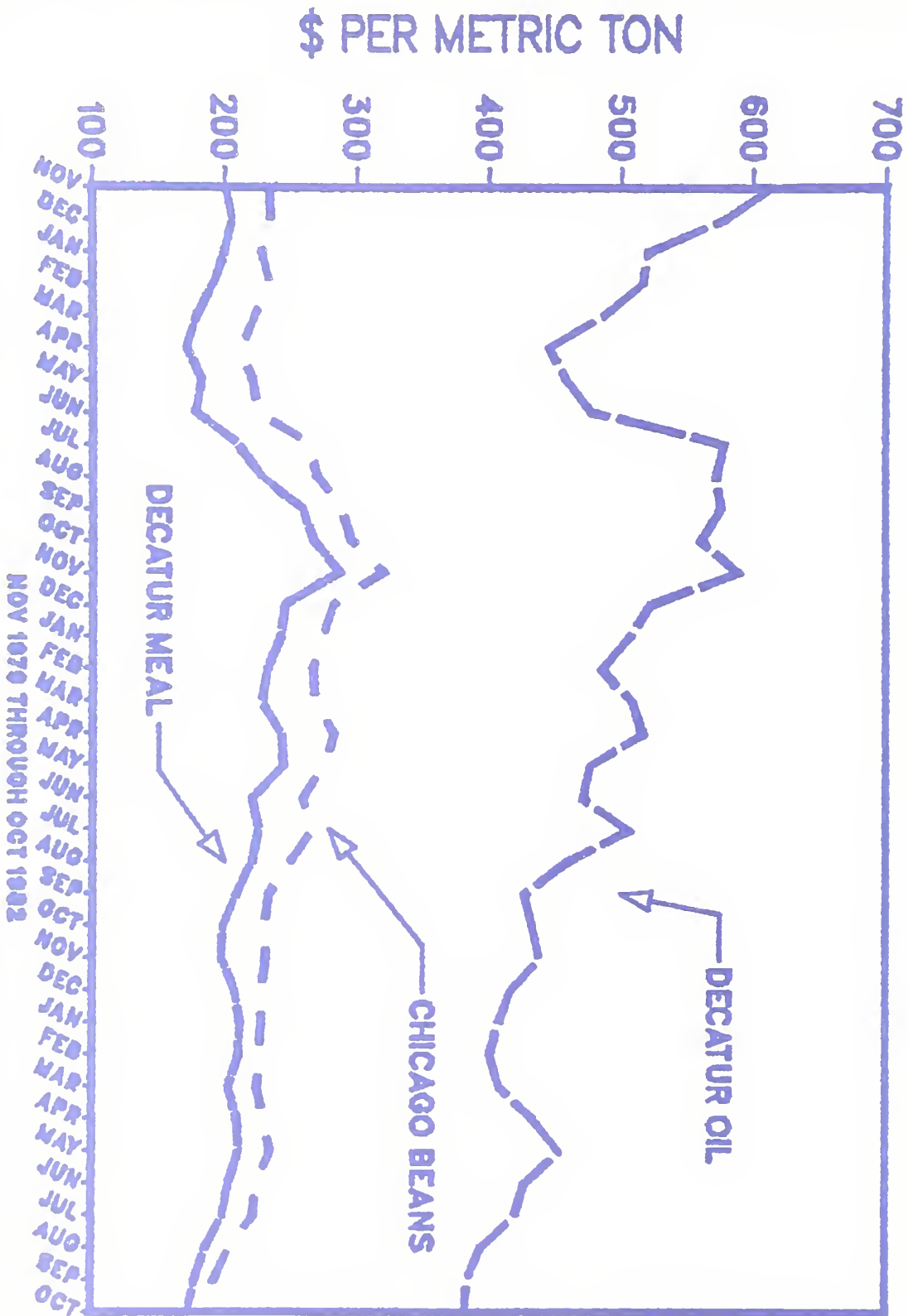


Chart VI

U.S. PRICES: SOYBEANS, MEAL, & OIL



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1983 Agricultural Outlook Conference, Session #14
Washington, D.C.



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Large supplies and low prices dominate the 1982/83 U.S. soybean outlook. Although both domestic use and exports are expected to rise this season, the increase will fall far short of the change in supplies. Stocks will build, and real soybean prices could fall to their lowest level in many years. Given prospects for weak economic growth in 1983 and further cutbacks in pork production, adjustments to bring soybean stocks and real prices to more normal levels will have to come initially from the production side. Soybean acreage will likely decrease in 1983, but supplies are expected to continue large relative to demand.

Supplies Are Record High

Based on conditions as of November 1, 1982, U.S. soybean production is forecast at 2.3 billion bushels, 15 percent above 1981. This output, combined with a carryin of 268 million bushels on September 1, gives a record-large supply of 2.57 billion for 1982/83. The previous largest supply was 2.44 billion bushels in 1979/80. (table 1.)

The big 1982 crop reflects increases in both area and in the average yield. Soybean planted acreage was 72.3 million, 70.9 million of which are expected to be harvested. In 1981, 67.8 million acres were planted, and 66.4 million were harvested. The average yield was a record 32.4 bushels per acre, up from 30.1 bushels in 1981.

The soybean-to-corn price ratio was slightly higher in 1982 compared with 1981 (figure 1). However, the main factor behind the increased soybean acreage in the Corn Belt may have been that corn farmers had to reduce acreage to qualify for the loan programs and the target price for that crop. In fact, soybean acreage increased in 1978, 1979, and 1982--years when acreage reduction programs were in effect for corn. Early data for 1982 indicate that many corn producers who participated in the 10-percent acreage reduction program planted less than 90 percent of their corn acreage base. In some cases, no doubt, the difference between 90 percent of the base and the actual corn acreage--about 2.5 million acres--was planted to soybeans.

In the South Central and Southeastern States, soybean acreage was nearly 1 million higher in 1982. As shown in figure 2, the soybean-to-cotton price ratio was also up from 1981. And, although the cotton target price of 71 cents a pound was high relative to expected soybean prices, farmers had to reduce their cotton acreage by 15 percent from an established

Table 1.-- U.S. soybeans and products (domestic measure) 1/

Commodity	: 1980/81 :	1981/82 :	1982/83 Projections		
	:	: Estimated :	:	:	: Probable
	:	:	: Oct. 22 :	Nov. :	: variation 2/

SOYBEANS	:				
Area	:	Million acres			
Planted	: 70.0	68.0	72.3	72.3	
Harvested	: 67.9	66.4	70.9	70.9	
Yield per harv.	:	Bushels/acre			
unit	: 26.4	30.1	32.4	32.4	+0.8/-0.8
	:	Million bushels			
Beginning stocks	: 359	318	268	268	
Production	: 1,792	2,000	2,300	2,300	+60 /-60
Supply, total	: 2,151	2,318	2,568	2,568	+60 /-60
Crushings	: 1,020	1,030	1,090	1,090	+25/ -25
Exports	: 724	929	960	940	+25/ -25
Seed and feed	: 66	70	70	70	
RESIDUAL	: 23	21	18	18	
Use, total	: 1,833	2,050	2,138	2,118	+40/ -40
Ending stocks	: 318	268	430	450	+40/ -40
Avg. farm price (\$/bu):	7.57	6.08	5.25-6.00	5.25-5.75	
	:				
SOYBEAN OIL:	:	Million pounds			
Beginning stocks	: 1,210	1,736	1,150	1,102	
Production	: 11,270	10,979	11,880	11,880	+250/-250
Supply, total	: 12,480	12,715	13,030	12,982	+250/-250
Domestic	: 9,115	9,536	9,750	9,802	+125/-125
Exports	: 1,629	2,077	2,150	2,075	+200/-200
Use, total	: 10,744	11,613	11,900	11,877	+150/-150
Ending stocks	: 1,736	1,102	1,130	1,105	+150/-150
Avg. price 3/	: 22.7	19.0	16.0-20.0	16.0-20.0	
	:				
SOYBEAN MEAL:	:	Thousand short tons			
Beginning stocks	: 226	163	245	175	
Production	: 25,312	24,650	26,000	26,000	+600/-600
Supply, total	: 24,538	24,813	26,245	26,175	+600/-600
Domestic	: 17,597	17,730	18,100	18,100	+350/-350
Exports	: 6,778	6,908	7,850	7,850	+300/-300
Use, total	: 24,375	24,638	25,950	25,950	+350/-350
Ending stocks	: 163	175	295	225	+50/ -50
Avg. price 4/	: 218.20	182.50	150-175	150-175	

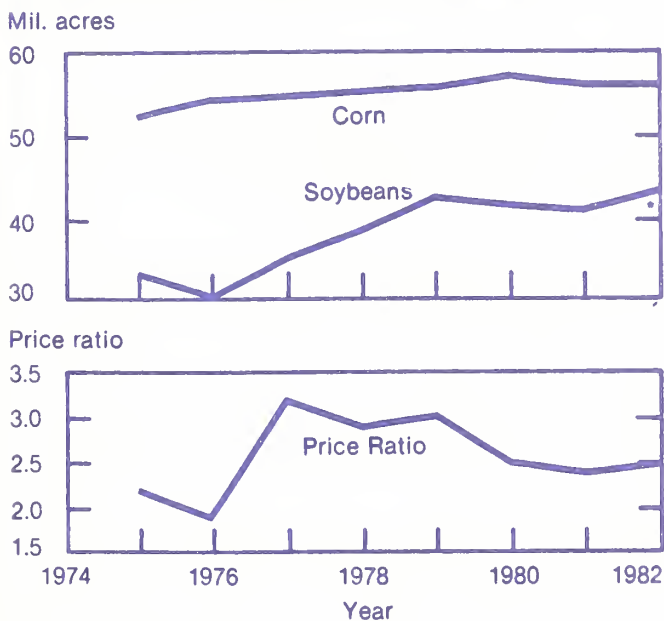
1/ Marketing year beginning September 1 for soybeans; October 1 for soybean oil and meal. 2/ The "probable variation" reflects the root mean square error and/or standard error of estimate from trend and judgment. Chances are about 2 out of 3 that the outcome will fall within the implied ranges. 3/ Simple average of crude soybean oil, Decatur, cents per pound. 4/ Simple average of 44 percent protein, Decatur, dollars per short ton.

base to qualify for target price protection. Participation in the cotton program was widespread throughout the South, and as for corn in the Midwest, many participants reduced acreage by more than that required by the program. This probably added some acreage to soybeans.

Over a third of the soybeans planted in the South were double-cropped with winter wheat. In 1982, double-cropped soybean acreage was around 8 million, up about 60 percent from 1981. There was extremely low participation in the 1982 wheat acreage reduction program in the areas with heavy double-cropping.

Widespread abandonment of cotton acreage in Texas caused a sharp increase in soybean area in that State. Soybean acreage for harvest as of June 1--prior to the severe hail and rainstorms that swept across the High Plains--was estimated at 740,000. As of September 1, the estimate increased to 1,020,000 acres.

Soybean and Corn Acreage in 9-State Corn Belt; Soybean/Corn Price Ratio, Previous Year



* Acreage reduction for corn.

Figure 1

Soybean Acreage in South Central and Southeast Related to Previous Year Soybean/Cotton Price Ratio

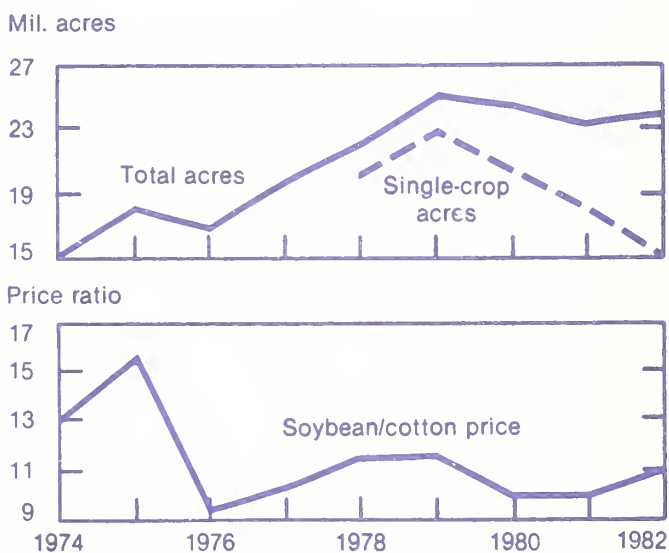


Figure 2

Low Prices Stimulate Use

U.S. soybean use in 1982/83 is forecast at 2.12 billion bushels, 3 percent above 1981/82. The increase will result from lower prices, rather than a shift in overall demand. Domestic processors are expected to crush 1.09 billion bushels of soybeans, 60 million above 1981/82. Exports are forecast at 940 million bushels, an 11-million increase from last season.

Compared with last season, the supply for 1982/83 is larger by 250 million bushels. However, the forecast increase in combined crush and exports is only 71 million bushels, or 28 percent of the increase in supply. Supplies rose in 6 of the previous 10 years, and in those instances, the change in use relative to the change in supply ranged from 58 percent in 1979/80 to 123 percent in 1981/82. So, the forecasts for 1982/83 indicate a significant departure from the soybean market's past behavior. This season's unique combination of low corn prices, reduced hog numbers, weak economic activity, and a strong U.S. dollar support the forecast of only a moderate increase in use.

More Soybeans To Be Crushed

Domestic processors are expected to crush 1,090 million bushels of soybeans in 1982/83, 60 million more than last season. This season's estimated crush represents 42 percent of the U.S. supply, down from 44 percent last season and 47 percent in 1980/81. The gross crushing margin--the value of the oil and meal less the season-average farm price--was 31 cents a bushel last season and is expected to be about a fifth higher in 1982/83. Margins have been relatively narrow since 1979/80, when the average gross margin was over 70 cents. Crashings in September narrowly topped the year-earlier level, but more recently, crashings reportedly were well ahead of last year.

Meal Use to Rise 6 Percent

Total soybean meal use is forecast at 26 million short tons in 1982/83 (October-September), 6 percent above 1981/82. Domestic use, at 18.1 million tons, would be 2 percent above last season, while exports, at 7.85 million, would be 14 percent higher.

The increase in domestic use is based on higher livestock feeding rates this season. Some indicators of feeding rates--the livestock/meal price ratios--are expected to be substantially higher. The hog/meal price ratio, for example, averaged about 5.7 last season; in 1982/83, the ratio could jump to around 7.5 (figure 3). More meal could be fed to broilers this year, as poultry production is expected to expand by about 2 percent, and the broiler/meal price ratio is also increasing.

The limiting factor in domestic meal use is the outlook for further cutbacks in pork production. The September Hogs and Pigs report showed that producers are continuing to reduce their inventories of hogs and pigs on a year-to-year basis. The overall inventory in the 10 States surveyed was 12 percent below a year earlier, and the breeding inventory was down 13 percent. Farrowing intentions were down 10 percent for September-November, and 4

Soybean Meal Feed Demand, United States

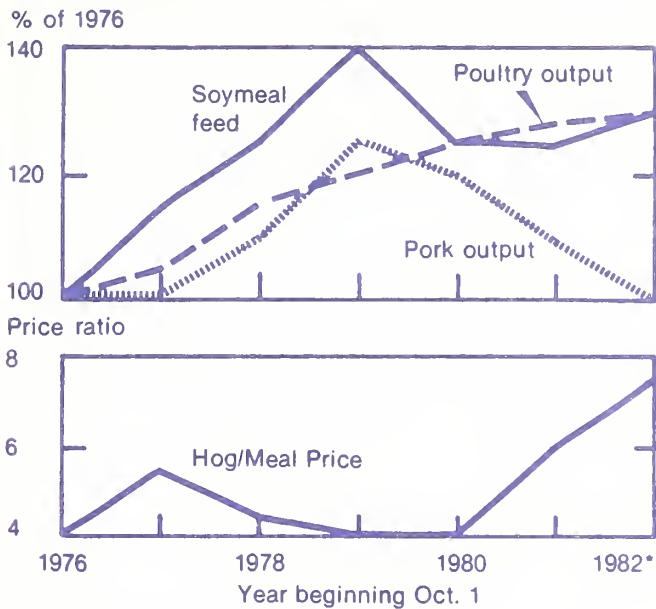


Figure 3

Factors Affecting U.S. Soybean Exports

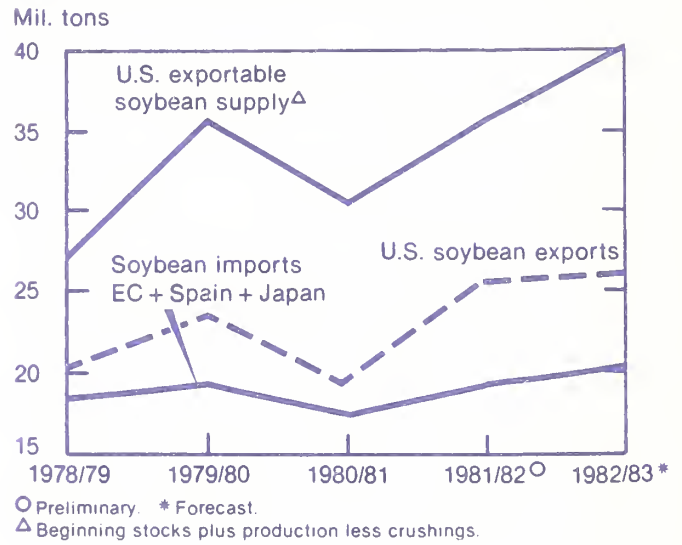


Figure 4

Soybean Carryover and Price

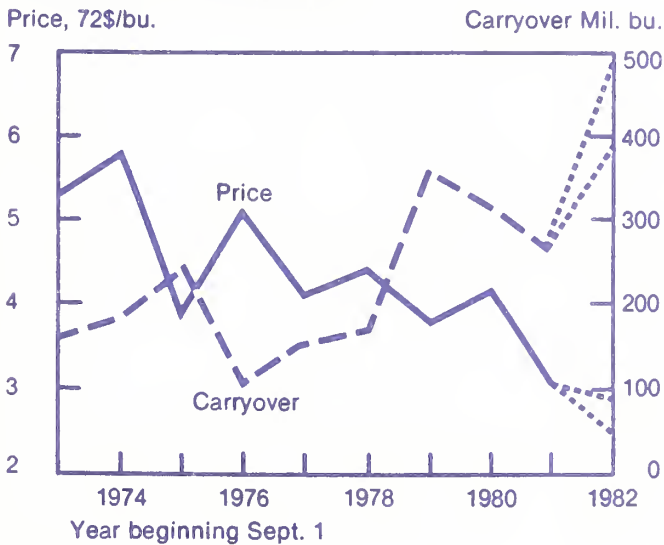


Figure 5

Distribution of Monthly High and Low Soybean Prices, Index of Quarterly Change: 1972/73-1981/82

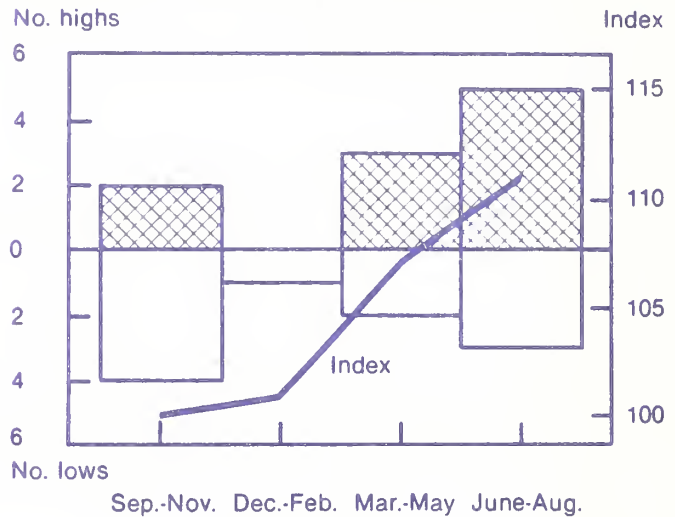


Figure 6

percent for December-February. These reductions suggest substantial declines in pork production during most of 1983. For the 1982/83 feeding year (October-September), pork production could decline around 9 percent, following a 7.5 percent drop last year. Note, however, that more soybean meal was fed in 1981/82 even with the drop in pork output.

The key market for U.S. exports of soybean meal is the European Community (EC), which took around 60 percent of our meal exports in 1981/82. Because of a slight increase in expected livestock output in 1983 and a lower soybean/corn price ratio, EC meal consumption could increase substantially this season. The variable levy on EC corn imports makes the meal/corn price ratio there about one-half of the ratio in the United States.

U.S. soybean meal prices are expected to average between \$150 and \$175 a short ton this season, down from \$183 last year and \$218 in 1980/81. In October, meal prices averaged \$157 a ton.

Soybean Oil Use Increasing

Continued strong demand for soybean oil is expected to result in a record domestic use of 9.8 billion pounds in 1982/83, 3 percent above last season. In 1981/82, the soybean oil used in baking and frying fats totaled 2.99 billion pounds, compared with 2.68 billion in 1980/81. Soybean oil's share of this end use, at 67 percent, was up 4 percentage points from 1980/81, and the total use of baking and frying fats was also higher. Low soybean oil prices relative to lard and edible tallow spurred the rise in its use (table 2).

* * * * *

Table 2--Fats and oils used in edible products

Year beginning October 1	1979/80	1980/81	1981/82 1/
		Million lb.	
Soybean oil:			
Baking or frying fats	2,658	2,675	2,990
Margarine	1,648	1,666	1,729
Salad or cooking oil	4,153	4,226	4,368
Other edible	35	43	51
Total edible	8,493	8,610	9,138
Total fats and oils			
Baking or frying fats	4,202	4,224	4,482
Margarine	2,033	2,022	2,013
Salad or cooking oil	5,271	5,280	5,438
Other edible	338	381	381
Total edible	11,843	11,908	12,314

1/ Preliminary

Soybean oil will face less competition from lard and from cottonseed oil in 1982/83, but palm oil will be more competitive. Lard production will fall in line with the cutback in hog slaughter--around 9 percent. Cottonseed production is a fourth below 1981/82. In October, palm oil prices at U.S. ports averaged 18 cents a pound, down from 24 cents in early 1982.

Soybean oil exports are forecast to be little changed from last season's 2.08 billion pounds. So, with total use about matching production, ending stocks will remain around 1.1 billion pounds. For the season, soybean oil prices should average between 16 and 20 cents a pound, most likely being only slightly below last season's 19 cents. In October, the average price was 17.4 cents a pound.

Soybean Exports Could Be Record High

U.S. soybean exports are forecast at 940 million bushels for 1982/83, up from last season's record 929 million. As is true for meal, the EC is the key market for U.S. soybeans, taking about 45 percent of our 1981/82 exports. Even though the United States has a much larger exportable supply this season, the strong dollar and increased competition from sunflowerseed, rapeseed, and palm oil is moderating the increase in our soybean exports (figure 4).

The U.S. share of world soybean trade could be around 84 percent in 1982/83, slightly below last season because of an expected sharp expansion in Argentine exports. Soybean production in Argentina is forecast to be nearly 15 percent larger in 1982/83 and a 12 percent increase is expected in Brazil. Argentina could increase its soybean exports by a third, while Brazil is expected to once again be the world's leading soybean meal exporter.

Record Soybean Carryover Depresses Prices

Soybean prices in 1982/83 are already feeling the weight of a prospective record carryover--450 million bushels. Farm prices fell to \$5.03 a bushel in mid-October, compared with \$6.06 a year earlier. The season-average price for 1982/83 is forecast at \$5.25 to \$5.75 a bushel, down from \$6.08 in 1981/82 and \$7.57 in 1980/81.

In real terms (1972 dollars), the forecast price range for 1982/83 is about \$2.50 to \$2.75 a bushel. The 1982/83 loan rate of \$5.02 a bushel--\$2.43 in 1972 dollars--will offer some support. The relationship between the soybean carryover and real prices is shown in figure 5. Real prices have trended downward since 1976/77.

Figure 6 shows that, most often, the monthly low soybean price occurs in the first quarter of the marketing year, and the monthly high in the last quarter. In the 1974, 1980, and 1981 crop years, the pattern was reversed. The "short-crop" theory held for 1974 and 1980; weak demand ruled in 1981/82.

Figure 6 also shows that the average price usually increases about 10 to 12 percent from the first to the last quarter of the marketing year. Today, this rate of change hardly covers the interest costs of storing soybeans. Whether this general pattern holds in 1982/83 depends on several factors, including farmer's use of the soybean loan program, any changes in hog producer's intentions, and crop production prospects in 1983.

Extended Outlook

The forecast soybean stocks-to-use ratio for 1982/83 is 21 percent, well above the "normal" 10 to 14 percent. The ratio is likely to be reduced, but not significantly, in 1983/84. Given trend yields and modest economic growth, total use could expand 2 to 3 percent next season. This increase is largely predicated on the forecast recovery in pork production and, consequently, stronger soybean meal demand. Furthermore, soybean production will likely decline from the 1982 level. The trend yield for 1983--a debatable item--is almost certainly below the record 32.4 bushels of 1982, and acreage could also be lower.

Weather conditions, price expectations at planting time, and farmers' response to the grain and cotton programs will be instrumental in determining 1983 soybean acreage. Assuming weather conditions next spring do not favor planting soybeans, soybean acreage could drop to around 70 million. Lower soybean prices, compared with 1981, stronger incentives to participate in the feed grain acreage reduction program, and continued high participation in the cotton program support the forecast of a decline in soybean acreage. There is little doubt that substantially more acreage in major soybean growing areas will be devoted to conserving uses in 1983. Moreover, a strong case can be made that soybeans will be less competitive with corn and cotton grown under the 1983 programs.

Although the acreage reduction requirements are greater for both corn and cotton, higher target prices and the diversion payment, particularly for corn, will require cash soybean prices of around \$6.30 a bushel next spring for soybeans to be as competitive as they were in 1982. Such a price rise from current levels is unlikely. So, the incentive for participating farmers to plant less corn and cotton than the maximum permitted under the farm programs is much weaker than last year when combined underplantings were 2.5 to 3 million acres (including some weather-related soybean plantings in Texas). Presumably, most of the underplanted acreage went to soybeans in 1982.

In the final analysis, a reduction in acreage of 2 million or so will not be nearly enough, by itself, to cause a significant gain in the real price of soybeans. With a 2 million acre cut in area and yields near trend--around 30.5 bushels--the projected supply for 1983/84, including a forecast carryin of 450 million bushels, would hardly be changed from this season's record 2.57 billion bushels. The importance of the yield assumption is well illustrated by the fact that a 1 bushel change in yield has the same effect on production as a 2.3 million acre change in harvested area.

Outlook for Other Oilseeds: Highlights

The supply and use projections for sunflowerseed, cottonseed, and peanuts are given in tables 3-5.

U.S. sunflowerseed crushings--about 374,000 metric tons during 1981/82--fell dramatically from the previous year's record 780,000 tons. U.S. sunflower crushing capacity will expand to over 2 million tons this fall when two new, large plants in North Dakota become operational. So, U.S. sunflowerseed crushings are expected to be much larger in 1982/83, and they may reach 800,000 tons.

Exports of sunflower oil are expected to total 180,000 tons in 1982/83, a 75-percent increase over 1981/82. The U.S. cotton crop is down sharply from last year, which will help sunflower oil find markets in a number of foreign countries that are major users of cottonseed oil. The largest export market for U.S. sunflower oil in 1981/82 was the Soviet Union, which took over 40 percent of the exports.

The average farm price for sunflowerseed in 1981/82 was \$10.90 per cwt, down 20 cents from the previous year. The average price received this October, at \$8.82, was about \$1.50 lower than a year earlier. The lower price is due partly to the significant increase in sunflower production this year, but more importantly to the worldwide glut in oilseed supplies. The average farm price for 1982/83 is forecast at about \$9.50 per cwt.

Despite the lower production and the drawdown of excess stocks, cottonseed prices during 1982/83 will likely average even lower than last season's depressed levels. Last season, the combination of a 15.6-million-bale cotton harvest and a 2-billion-bushel soybean crop lowered the season-average farm price for cottonseed to about \$87.50 a ton, down from \$129 in 1980/81.

This season's record soybean supplies will keep cottonseed oil and meal prices under pressure. Low prices for cotton lint and feed will also reduce returns from the remaining cottonseed products--linters and hulls--which account for about a third of the weight of cottonseed but only about a fifth of product value. The low product prices will cause reduced bids for cottonseed. For 1982/83, cottonseed prices could average about \$75 a ton.

The Commodity Credit Corporation loan rate for 1982-crop quota peanuts is \$550 a ton, compared with \$455 in 1981. The loan rate for 1982-crop "additional" peanuts is \$200 a ton, down \$50 from the 1981 rate. Farm prices for all grades of peanuts during October 1982 averaged 26 cents a pound, compared with 26.6 cents a year ago. Supplies of peanuts available for export will exceed demand, leading to lower farm prices this year.

Table 3--Sunflower seed: Supply, disappearance, and price, U.S.

Year Sept. 1	Supply				Disappearance				Price	
	Begin- ning stocks	Pro- duction	Imports	Total	Crush	Non-oil usage +seed	Exports	Total	Ending stocks	Average received by farmers
					1,000 metric tons					Dol./mt.
1980	980	1,748	28	2,756	789	167	1,505	2,452	304	245
1981	304	2,096	32	2,433	374	178	1,555	2,107	325	240
1982 ^{1/}	325	2,547	15	2,887	800	187	1,500	2,497	390	210
1983 ^{1/}	390									

^{1/} Forecast.

Table 4--Cottonseed: Supply, disappearance, and price, U.S.

Year Aug. 1	Supply			Disappearance				Price	
	Begin- ning stocks	Pro- duction	Total	Crush	Exports	Other	Total	Ending stocks	Average received by farmers
				1,000 short tons					Dol./ton
1980	1,058	4,471	5,529	4,076	133	922	5,131	398	129.00
1981	398	6,397	6,795	4,575	41	1,398	6,014	781	87.50
1982 ^{1/}	781	4,748	5,529	4,100	50	979	5,129	400	75.00
1983 ^{1/}	400								

^{1/} Forecast.Table 5--Peanuts (farmers' stock basis): Supply, disappearance, and price, U.S.^{1/}

Year Aug. 1	Supply				Disappearance					Price		
	Begin- ning stocks	Produc- tion	Im- ports	Total	Crush	Exports	Food	Seed/feed loss, and shrinkage	Total	Avg. rec. by farmers	Support Quota	Additional
					Million pounds						Cents/lb.	
1980	628	2,301	401	3,330	446	503	1,647	321	2,917	25.1	22.75	12.5
1981	413	3,988	2	4,403	574	576	1,933	564	3,647	26.8	22.75	12.5
1982 ^{2/}	756	3,432	2	4,190	473	735	2,025	257	3,490	25.6	27.50	10.0
1983 ^{3/}	700											

^{1/} Disappearance forecast for latest year. ^{2/} Preliminary. ^{3/} Forecast.

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Large variabilities in rainfall and temperature prior to and--more importantly--during the crop cycle are responsible for fluctuations in crop yields from projected trends. All world agricultural areas are subject to weather's erratic behavior, but impact on final yield output results largely from the influence of specific weather variables on key stages of the crop growth cycle. In retrospect, the 1982 growing season was no exception as several major agricultural areas experienced large variabilities in the weather.

In the United States, cool, wet weather in early spring 1982 delayed corn and soybean planting in the western Corn Belt. The delays raised concerns about weather's impact on the crops later in the season. Namely, the late start would push the critical reproductive stages of development into late July and August which, climatologically speaking, is the warmest time of year. This would increase the possibility of heat and moisture stress during reproduction and filling periods. Further, an early freeze might prematurely end the growing season before crops fully ripened.

This scenario repeated 1981's early-season conditions in the eastern Corn Belt. However, although crop development lagged behind normal throughout the 1982 season, generally cooperative weather conditions alleviated the earlier planting season concerns. Temperatures during the summer of 1982 remained generally below normal with no major episodes of significant moisture stress occurring in August in the western Corn Belt. The harvest of corn and soybeans in this area lagged well behind schedule by late October, but most of the corn crop became mature before a killing frost. In the eastern Corn Belt, warm weather during the 1982 growing season pushed crop development ahead of schedule in many areas. Periods of dryness in some areas reduced yields from earlier anticipated levels. Overall, despite the late start in the western Corn Belt and periods of dryness in parts of the eastern Corn Belt, generally favorable temperatures and adequate moisture during key stages of development contributed to record yields of corn, soybeans, and wheat.

In the USSR, winter grains broke dormancy in spring 1982 with generally less-than-favorable moisture supplies for vigorous vegetative growth. The below-normal precipitation pattern continued into early June covering most of the Ukraine, North Caucasus, and southern Volga Valley. Winter grains in more southern areas were advancing into the critical heading stage, and the moisture stress resulted in some yield reductions. In the New Lands, unfavorably dry, warm weather conditions reduced planting prospects in May, particularly in northern Kazakhstan and adjacent areas. Hot, dry weather conditions continued through mid-July, stressing poorly emerged grains as they advanced through the reproductive stage resulting in reduced spring wheat yields.

In Asia, the late arrival of the southwest monsoon delayed planting of cotton and groundnuts in northern producing areas. Once the monsoon arrived, the rainfall pattern was erratic, with below-normal precipitation falling on most areas. As a result, some groundnut yield losses were realized, particularly in Gujarat where rainfall was well below normal during the critical reproductive period.

A prime example of the harsh reality of weather's impact on agriculture is the current drought encompassing eastern Australia. The severe drought is one of the worst in Australia's records. The dry spell began in April and has persisted throughout the entire wheat-growing season. The drought-affected area stretched from Queensland through Australia's prime farm lands of New South Wales and Victoria into South Australia. This area normally produces over 70 percent of Australia's wheat crop (based on 1976-1980 average). Crops withered and rangeland dried up forcing the slaughter of livestock. The relentless drought reduced the output of New South Wales, traditionally the leading wheat-producing state, by over 60 percent. Drastic yield reductions are also being realized in the other 3 drought-affected states. Western Australia, the remaining wheat-producing state, is expected to yield a record crop due to favorable weather throughout the season. In fact, that state will likely produce about 70 percent of the total crop this year compared to about 30 percent on the average. The drought in eastern Australia also is beginning to affect prospects for summer crops such as cotton, sorghum and corn.

Autumn harvests are nearing completion in major Northern Hemisphere agricultural areas, and attention is now focused on next year's crops. Winter grain sowing is taking place over many areas, and adequate soil moisture accompanied by seasonal temperatures is needed for proper crop germination, emergence, and establishment. Also, pre-season precipitation is needed to recharge soil moisture supplies for next spring's planting season. These factors, which are important determinants for next year's yield prospects, serve as initial indicators for the 1983 outlook.

A summary of moisture conditions for both national and international crop areas follows. Figure 1 highlights the agricultural weather situation for Northern Hemisphere winter grains and Southern Hemisphere crops to be harvested in the next several months.

National Situation

Winter Wheat: Autumn rains benefited hard red winter wheat grown in eastern Montana, South Dakota, Nebraska, and much of Kansas. The crop has emerged in these areas in generally good condition. Adequate subsoil moisture supplies are providing a favorable outlook for growth next spring. In contrast, autumn moisture in winter wheat areas of the southern Great Plains has been less favorable. Planting was delayed in many wheat areas of southwestern Kansas, western Oklahoma, and the Texas Panhandle due to dry topsoils. Scattered showers in late September provided necessary moisture for planting but below-normal precipitation in October and early November has stressed newly emerged grains. In fact, some replanting was necessary as seeds failed to germinate due to the lack of moisture in some areas of Texas. Cold weather in early November furthered the unfavorable conditions. Mild weather and additional rain is greatly needed to ensure sufficient plant development and hardiness before winter dormancy. Abundant winter and early

WORLD AGRICULTURAL WEATHER HIGHLIGHTS

Northern Hemisphere

November 17, 1982



WORLD AGRICULTURAL WEATHER HIGHLIGHTS

Southern Hemisphere

November 17, 1982

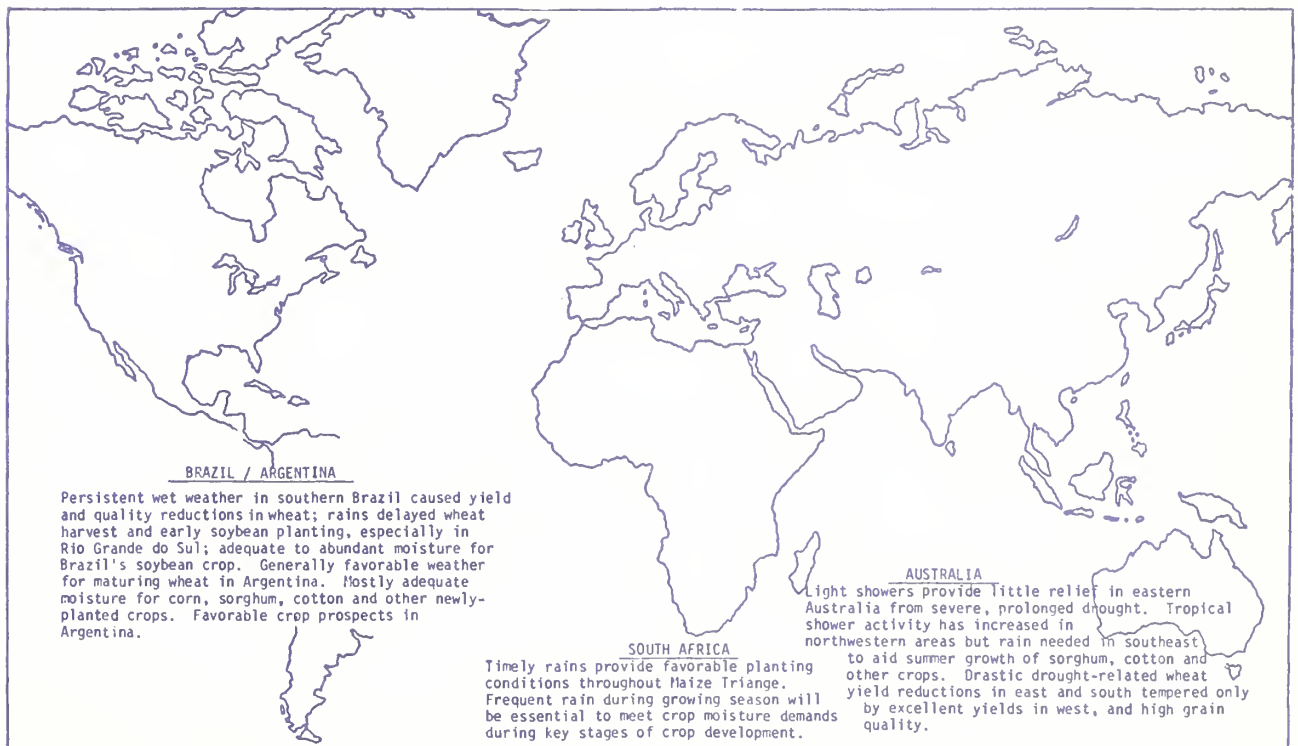


FIGURE 1

spring precipitation will be required to recharge subsoil moisture supplies for spring growth. In soft red winter wheat areas of the eastern Corn Belt, weather conditions have been generally favorable for germination and early growth. Adequate moisture provides an optimistic outlook for the winter wheat crop in the eastern wheat areas at this time.

Spring Wheat: Abundant October rains in the northern Great Plains, particularly the Dakotas and Minnesota, aided subsoil moisture recharge at the end of the growing season. These reserves should provide a good start to next year's growing season leading to early indications of a favorable outlook for spring wheat.

Corn/Soybeans: The generally favorable moisture conditions in the western Corn Belt during the 1982 growing season will manifest itself next spring in adequate subsoil moisture supplies throughout most of the region. Generous autumn rains have improved soil moisture supplies in the eastern Corn Belt. However, the late harvest has pushed autumn plowing behind schedule throughout the entire Corn Belt. Thus, farmers will look for favorable spring weather for land preparation and sowing of crops. In the southeast, generous October and early November rains aided soil moisture recharge. Thus, early prospects are good for soybeans and other crops in the southeastern U.S.

In conclusion, with the exception of the southern Great Plains, generally favorable moisture conditions offer an optimistic early outlook for crop growth and development during the 1983 growing season. It remains to be seen whether a third consecutive year of wet spring weather will occur, resulting in the planting delays experienced during the past 2 seasons in different portions of the Corn Belt, and, if generally favorable weather during the growing season continues to compensate for such a relatively poor start.

INTERNATIONAL SITUATION

(Based on data compiled at the NOAA/USDA Joint Agricultural Weather Facility through November 13, 1982)

USSR: Unfavorable weather conditions reduced wheat yields for the fourth consecutive year causing total Soviet grain production to fall well below anticipated levels. Winter grain crops came out of dormancy in spring 1982 with less-than-average winterkill, beginning vigorous growth in May over most of the major winter grain areas in the Ukraine, North Caucasus, and southern Volga Valley. Precipitation tapered off in May to below normal--a pattern which continued until mid-June. Winter grains entered the critical heading stage during this period with low moisture availability; also, some of these same areas had spotty emergence the previous autumn. These factors contributed to reduced yield prospects.

In spring grain areas east of the Ural mountains, temperatures rose sharply in April to above-normal while precipitation tapered off to below-normal. Topsoil moisture supplies, needed during the planting season for proper germination, were further reduced to unfavorably low levels in May, as temperatures continued above normal and much of the region remained dry. These adverse weather conditions persisted throughout much of the growing season in numerous spring grain areas, reducing yields in northern Kazakhstan and adjacent areas.

Regarding the newly planted 1983 crop, weather conditions for planting and early establishment of the winter grains have been mixed. Winter grains, grown from the Baltic States eastward through the northern Volga Valley and into the northern Urals, appear to have had favorable weather for early plant establishment and are now dormant. However, the present outlook for winter grains in the major producing areas further south is less favorable. In fact, dry weather since early August reduced topsoil moisture to unfavorably low levels in the North Caucasus and southern Volga Valley. In Figure 2, a map of the USSR winter wheat area is presented, along with an enlargement of the North Caucasus and southern Volga Valley where growing conditions during the autumn of 1982 have been very unfavorable for winter wheat.

Figure 3 depicts a plot of cumulative precipitation, representing a regional average of several stations in the North Caucasus and southern Volga Valley from July 5 to November 13, against the normal accumulation for that same time period. Since August 9, total precipitation has been about 17 percent of normal with only 10 mm falling on the region. About 25 percent of the total winter wheat crop is produced in this region and spotty seed germination is possible due to insufficient moisture.

In Figure 4, percentile rankings of total monthly rainfall for the period August - October for Rostov in the North Caucasus is presented. Thirty-two years of rainfall data were used in the analysis. The results show that precipitation for Rostov was ranked below the 20th percentile in 1982, indicating well-below-average rainfall for these 3 months and one of the driest years during the period. Rains in the eastern Ukraine around mid-October improved topsoil moisture conditions following a similar period of dryness. Favorable temperatures and additional precipitation will be needed prior to winter dormancy for winter grains in the Ukraine, southern Volga Valley, and North Caucasus to become sufficiently developed and hardened to withstand the rigors of winter. Significant spring rains will also be needed to ensure favorable yield prospects for the winter grain crop in 1983.

CHINA: Hot, dry weather covered the Manchurian Valley and parts of the North China Plain during the spring of 1982. These unfavorable weather conditions stressed non-irrigated winter wheat in the heading stage. However, despite this early-season dryness, 1982 was another successful crop production year, as generous summer rains benefited spring-sown crops over most of the region. In October, seasonably dry weather covered the major winter grain areas in the North China Plain. Some non-irrigated winter grain areas, particularly those in Hebei and western Shandong, were slightly short on moisture supplies. However, showers in early November benefited the grain crop in the North China Plain, and above-normal temperatures allowed continued autumn growth of the grains. At present, a generally favorable outlook exists for winter grain yields in 1983.

INDIA: The southwest monsoon arrived late in northern crop areas during spring 1982, delaying planting of cotton and groundnuts in many areas. Once the monsoon arrived, it was weak and erratic. To complicate matters further, the monsoon then withdrew from the area earlier than normal. As a

USSR WINTER WHEAT AREA

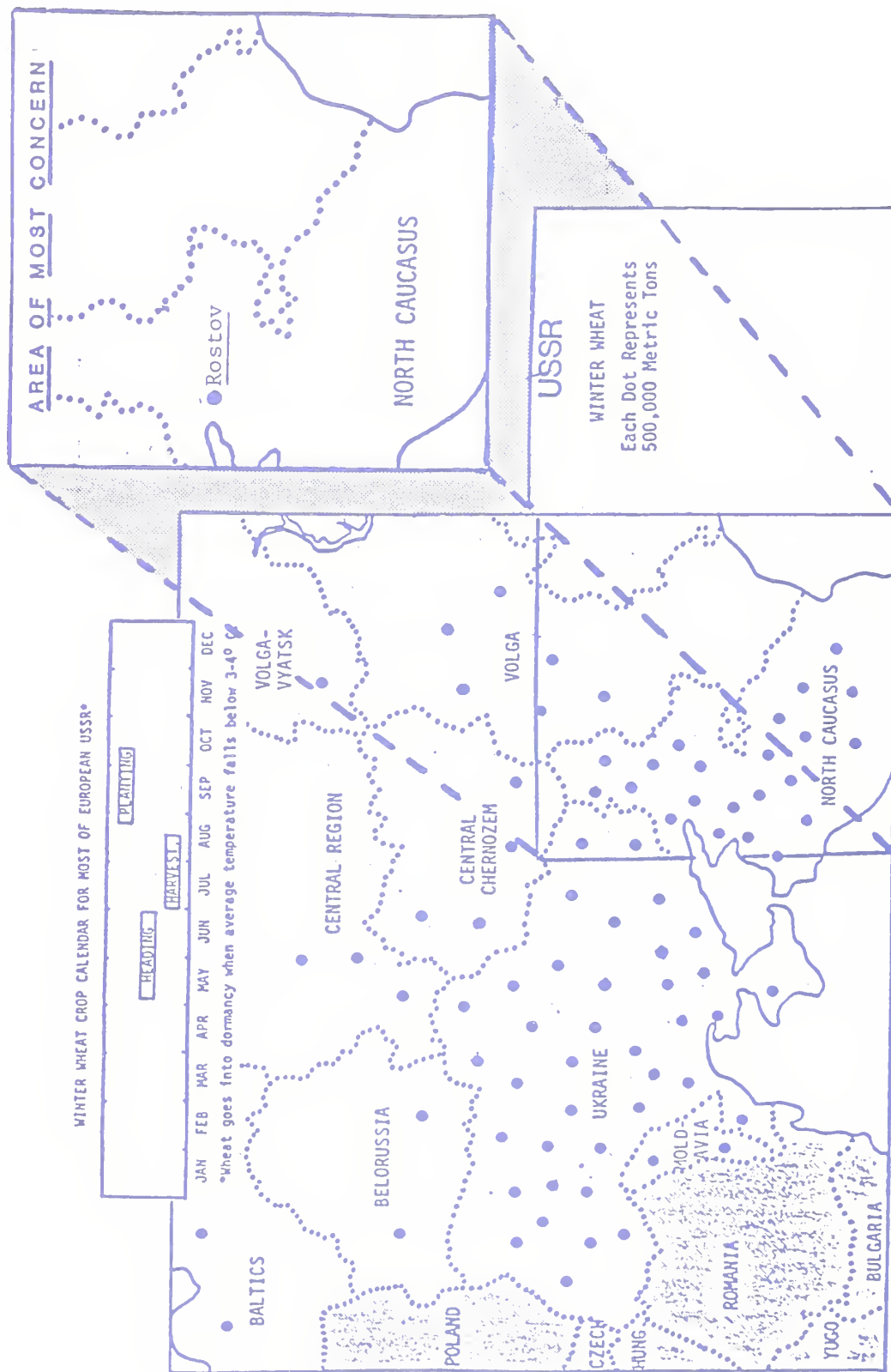


FIGURE 2

PLOT OF CUMULATIVE PRECIPITATION (July 5–November 13)

North Caucasus Region

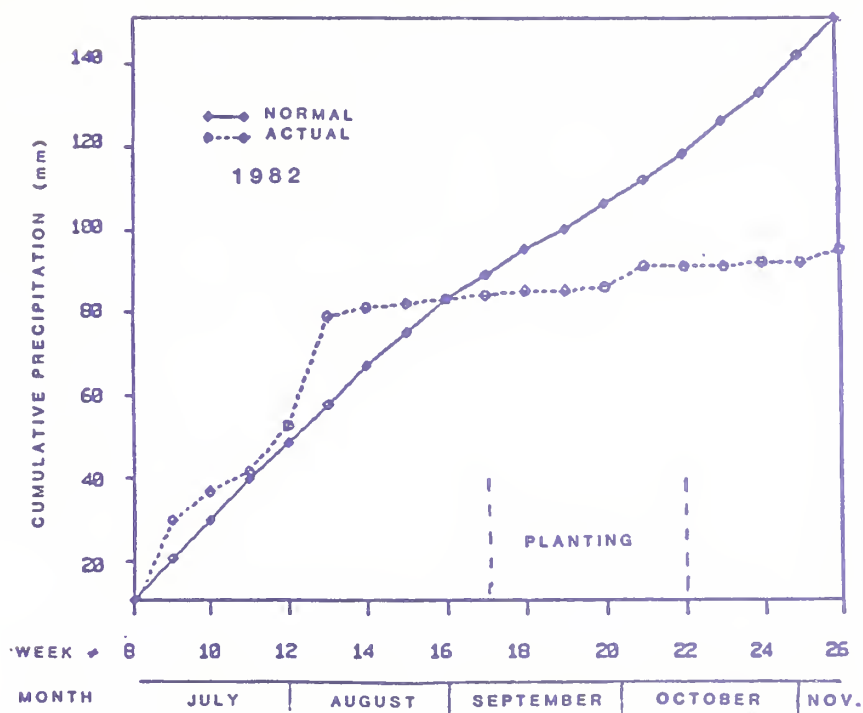


FIGURE 3

PERCENTILE RANKINGS OF PRECIPITATION (August–October)

Rostov

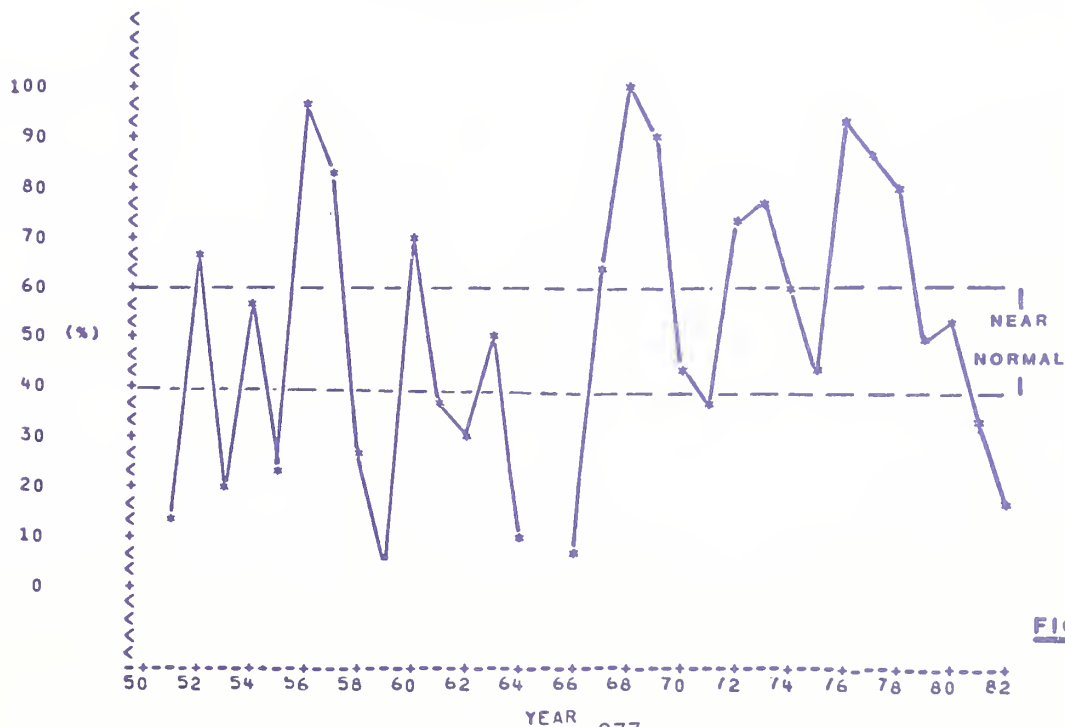


FIGURE 4

result, cotton and groundnut yield losses occurred in non-irrigated crop areas, particularly in Gujarat. In addition, the early withdrawal of the southwest monsoon created unfavorable soil moisture conditions for winter grain planting. In early November, a tropical storm entered Gujarat, weakening as it moved east. Showers produced by the storm covered winter grain areas in eastern Rajasthan, Madhya Pradesh, and the eastern half of the Uttar Pradesh, improving planting prospects somewhat. Winter grain areas of Punjab and Haryana received little rain, however. Supplemental irrigation will be required in many crop areas and those areas which are not irrigated must rely on winter showers from westerly storm systems to ensure favorable yields prospects. Crop conditions were more favorable in southern and eastern India.

BRAZIL and ARGENTINA: No significant freeze episodes occurred during the 1982 winter season in the coffee areas of Brazil. Further south in Rio Grande do Sul, persistent heavy rains since early June have inundated the wheat areas. The heavy rains promoted abundant weed growth and induced fungus disease in the wheat crop during its growth cycle. As the harvest season progressed, both the quantity and quality of the wheat crop were reduced by the prolonged, excessive moisture. Fields are now waterlogged causing delays in both the wheat harvest and soybean planting. The optimum planting time for soybeans is from November into mid-December; therefore, dry weather is urgently needed to allow completion of final wheat harvest and soybean planting efforts. One promising note on the abundant moisture is that, once planted, soybeans will have excellent moisture for early vegetative growth. In Argentina, beneficial precipitation fell over winter wheat areas of Buenos Aires and southern Santa Fe in October, aiding yield prospects. Recent rains also have helped planting prospects for spring sown crops such as cotton, corn, sorghum, first crop soybeans, and sunflowers. The outlook at this time for Argentina's crops is favorable. Weather conditions during January and February will have a significant impact on yield prospects of newly-sown crops.



Alan D. Hecht, Director, National Climate Program Office, NOAA

1983 Agricultural Outlook Conference, Session: Weather and Climate
Session #15

For Release: Tuesday, November 30, 1982

When Congress passed the National Climate Program Act in 1978, it expressed particular concern about the need to forecast climate a month or longer in advance, and to improve on the poor state of climate services. I will concentrate my remarks on progress and prospects for achieving these goals. Other important features of the National Climate Program and its relationship to the World Climate Program are discussed at length in the Five-Year Plan and annual reports to Congress.

Experimental Climate Forecast Program

Improving climate forecasts is a high priority of the National Climate Program. We can envision many applications for reliable climate forecasts made a year or more in advance. Agriculture, in particular, would have many uses for such information. Climate variation and weather extremes are the main cause of year-to-year variation in world grain production. The ability to forecast climate reliably one or more seasons in advance could have a key place in the management of global food reserves. The application would be especially important for U.S. agriculture because of the Nation's large contribution to the world's total supply and export volume of grain.

The National Weather Service (NWS) provides the official monthly and seasonal weather outlooks. Figure 1 shows the recently released seasonal temperature and precipitation forecast for November - 1982 to January 1983. This forecast projects cooler than average temperatures for most of the southern and eastern U.S. and wetter than average conditions over much of the southern U.S. However only the area shown in the stippled pattern has a moderately high probability of significant below average conditions. This forecast is based on statistical lag correlations between fall and winter atmospheric states and some consideration of sea surface temperature (SST) anomalies in the equatorial and North Pacific Ocean. No other specific effects (such as volcanic eruptions or solar variability) were considered in this forecast. I will discuss these "forcing factors" in more detail later in my talk.

NWS forecasts are issued monthly and provide a general guide to conditions for the next 3 months. This forecast and other experimental ones, although employing some statistical relationships, are substantially subjective. Over the past 40 years some precursors of climate change have been identified, but they are not consistently reliable. It is unlikely that any single index (like sunspot behavior) or combination of several indices can capture the full dimension of atmospheric variability.

90-DAY OUTLOOK FOR NOVEMBER 1982 through JANUARY 1983

OCTOBER 29, 1982

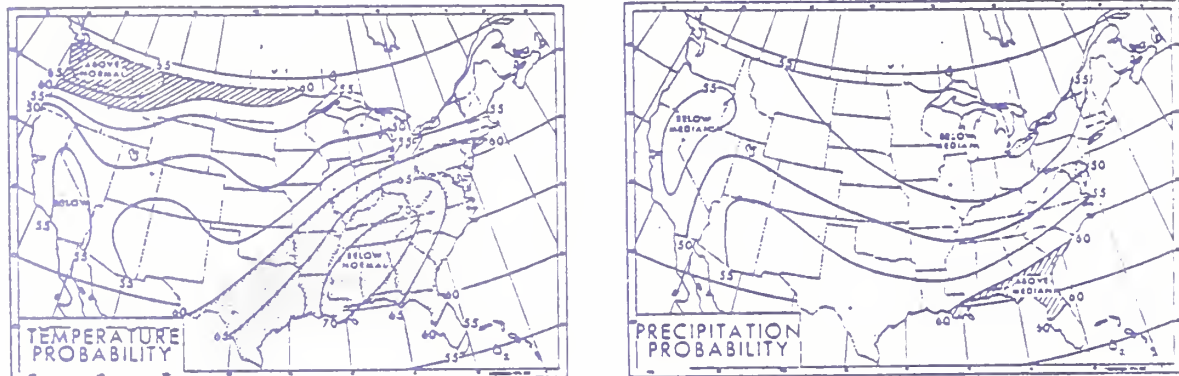


Figure 1

Many of you might not be aware that the roots of scientifically-based forecasting go back at least to 1936 when Secretary of Agriculture Henry Wallace turned to C.G. Rossby at the Massachusetts Institute of Technology (MIT) to begin a research effort in long-range weather forecasting. The impetus for beginning such a program was the great drought of the 1930's. Wallace was very interested in climate, and in 1920 published a paper describing the relationship between crop yields and weather. In 1936 he recognized the need to improve weather and climate forecasting and began funding MIT to begin such studies. It was not a large effort, and I understand how Henry Wallace felt when he announced to the New York Times in 1936 that university and government scientists were making a concerted effort in long-range forecasting and went on to say: "I don't think they will get anywhere. If AT&T were running the Program they would spend one million dollars; we will probably spend fifteen hundred."

The problem of matching resources to tasks is still with us and will require creative ways of funding to initiate new programs. I believe that the support of the private sector is a necessary component of a national program. **I am proposing and inviting several private companies with an interest in improving long-range forecasting to form an industrial consortium to help provide financial support for new experimental centers.**

The National Climate Program Office (NCPO) is taking the lead in organizing a national program in climate forecasting. NWS and other Federal agencies are making progress in seasonal forecasting. I feel their efforts can be made more effective by a coordinated national program wherein all Federal agencies involved in this research pool their resources and, with the NCPO, take a broader view of the problem at hand. My goal is to create several centers, each pursuing different methodologies but all working toward common objectives and all being coordinated through an Experimental Climate Forecast Centers Program in the NCPO. The first experimental forecast center was initiated at Scripps Institution of Oceanography in 1980. It is likely that a second center will soon be established.

The community of researchers in experimental forecasting and related research ought to meet regularly to review their work and to help plan future research. This group must be encouraged to develop new ideas, to try new methods, and to interact freely with their colleagues in the National Weather Service who are responsible for making critical climate forecasts. A 1980 report, "Regional-Seasonal Weather Forecasting", by the JASON study group reported that

"...there appears to be a dichotomy in the meteorological community with respect to generating and improving seasonal forecasts. On the one hand, there is the NWS group, which is responsible for making forecasts. But this group has insufficient time and resources to do the extensive research which might lead to improved analogue models or eventually even global circulation models. On the other hand, there are the academic and research institute-based groups for whom the possible improvement of seasonal forecasts is generally not a subject in which there is much enthusiastic effort."

I propose that as part of the Experimental Forecast Program a strong link be established between university research centers and operative forecasters of the National Weather Service.

The national program also must have a social science dimension to determine more precisely the utility of such forecasts for various segments of the society, to detail the risks and benefits of their use, and to develop the most applicable predictive formats. In this regard it is important that the NCPO devise ways to prevent premature reliance on any experimental forecast. I am concerned about predictions made early in the fall that this winter in the eastern half of the U.S. will be extremely cold. These forecasts are speculative and ought to be treated accordingly if they are used in management decisions. It may be relatively safe to predict a somewhat colder than average winter (but not extreme cold) for the eastern half of the United States since this has been the general trend of the past several years. Winter temperature averages for the United States east and west of the Mississippi River for the last 15 years (1968 - 1982) are shown in figure 2. For the eastern U.S., 5 of the last 6 winters were colder than the 15 year average. This series of cold winters (2.3° F below average) was preceded by a series of 6 warmer than average winters (by 2.7° F). For the western U.S. there was no similar run of warm years during the early 1970's. During this period eastern and western U.S. temperature averages tended to be more out of phase than in recent years.

The pattern shown for the eastern U.S. (figure 2) suggests a run of several years with warm and cold departures from the average. This reflects slowly varying changes in the large scale winter circulation. However, even though there are spells of several years of above average or below average temperatures, the historical record is often characterized by abrupt changes from year to year.

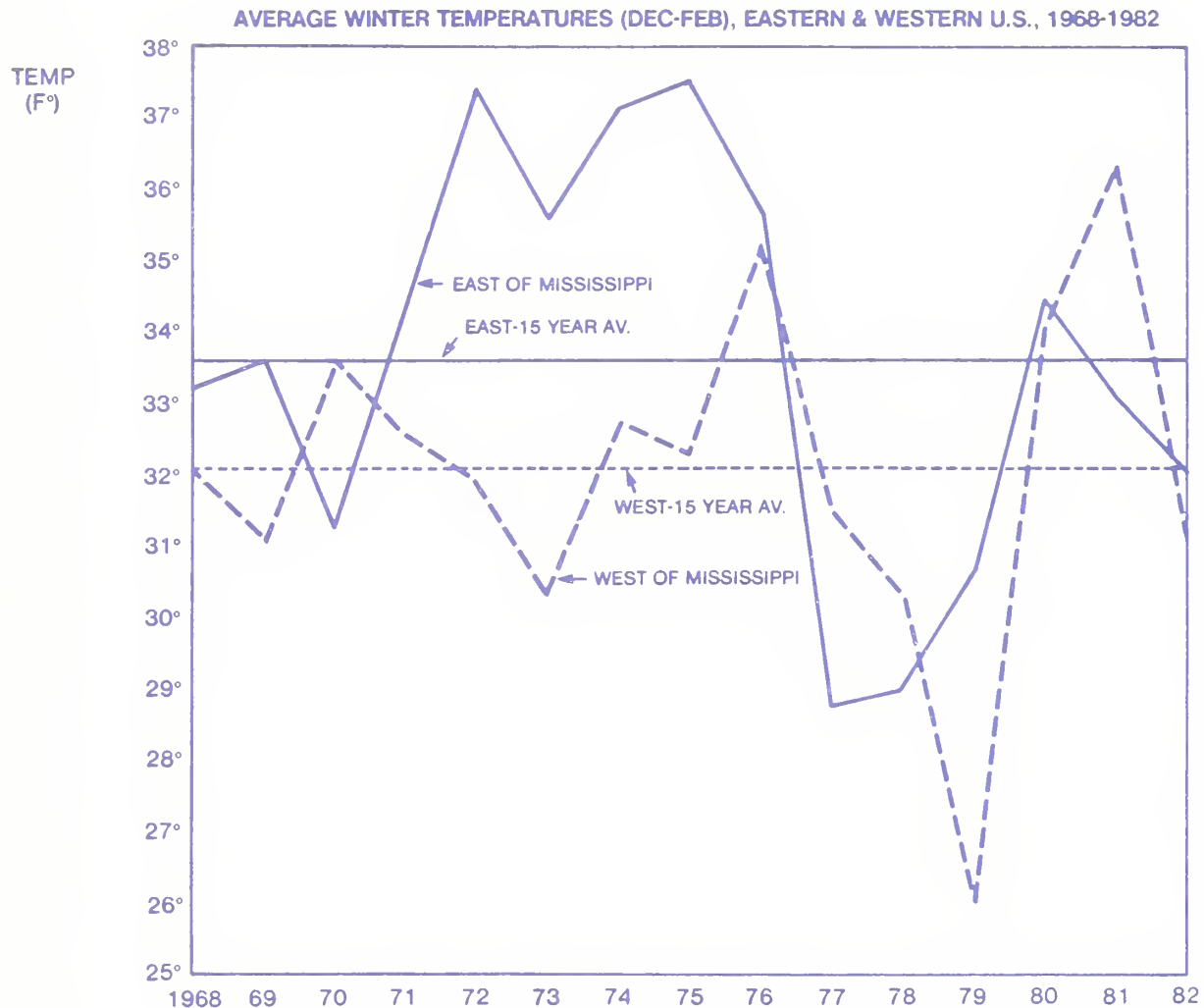


Figure 2

Forecasting This Winter's Weather: Major Factors

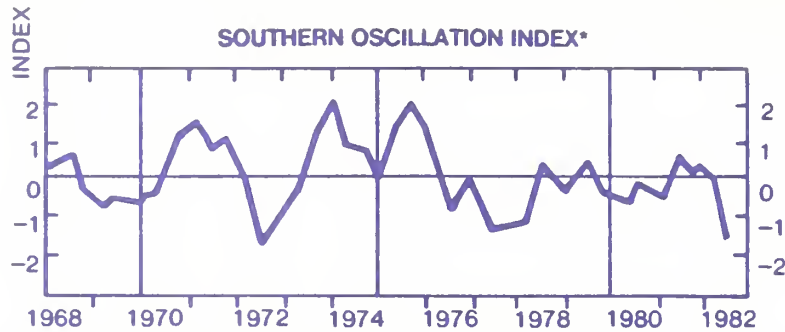
There are many factors which may affect the general circulation and global climate, several of which have received considerable attention in recent years. These include temperature patterns in midlatitude Pacific Ocean; variation in surface pressure, winds and tropical ocean temperatures associated with the Southern Oscillation and El Nino; volcanic activity, in particular the recent eruption of El Chichon; and variations in solar behavior.

Midlatitude Pacific Ocean temperature anomalies have been used for many years by Jerome Namias as a precursor of climate conditions over the United States. Some studies suggest that anomalous ocean conditions can redirect the westerly winds and jet stream. The winter of 1976-1977, for example, was preceded by several months of anomalously cold water in the North Pacific. However, the relationships between mid-latitude sea surface temperatures and winter conditions in the U.S. are only poorly understood and there is no consistent reliability to the method as a whole. In some instances, such as inter 1981-1982 when air temperatures over large portions of the U.S. were the lowest on record for several weeks in January, there was no clear antecedent temperature anomaly in the North Pacific Ocean. Conditions in the North Pacific today are colder than average in the central Pacific, a factor to be considered in this winter's forecast. However, this type of pattern has in the past been associated with a variety of weather patterns over the U.S.

Recent observations and developments of theory suggest that winter conditions over the U.S. are linked to large scale changes in wind, pressure and ocean temperatures over the tropical Pacific. These changes are associated with what are called the Southern Oscillation and El Nino.

The Southern Oscillation reflects major changes in atmospheric pressure over large areas and can be described by differences in air pressure at two Pacific Ocean stations 4,000 miles apart (Darwin, Australia and Tahiti). The Southern Oscillation (SO) was first identified by Sir Gilbert Walker about 50 years ago during his attempts to develop a method for forecasting monsoon rainfall over India. It is now the subject of revived interest because there is some theoretical basis for linking events in the tropical ocean with events in the middle latitudes and with climate over North America. The winter of 1976-1977, which was for the most part predicted, was in some way the end result of favorable precursor conditions in the tropical and North Pacific Ocean. Understanding these links will provide fundamental advances in climate prediction, and a major research program is now being organized to address this problem.

Figure 3 shows differences in the yearly average surface pressure between Tahiti and Darwin for the period 1968 to 1982. This Southern Oscillation Index (SOI) shows large variations between positive and negative anomalies, especially in 1971-1972 and in 1976-1977. When the index is negative, the air pressure is higher at Darwin and over a large portion of the western Pacific and Indian Ocean, and lower at Tahiti and over large portions of the central and eastern Pacific. Since 1977 the SOI has not recovered to previous high positive values. It has for several years fluctuated near the mean, at least until the last several months when the index value declined significantly and is comparable to the negative excursions of 1972 and 1976-1977.



*STANDARD DEVIATION OF MONTHLY AVERAGE ATMOSPHERIC PRESSURE
AT SEA LEVEL, FROM TAHITI TO DARWIN, AUSTRALIA

Figure 3

However, SOI involves more than a seesaw in surface pressure. It is the most striking example of interannual climate variability on a global scale. The SOI is associated with fluctuations in rainfall, ocean temperatures, strength of the trade winds in the tropical Pacific, variations in the subtropical jet stream over various parts of the globe, precipitation variation in India, and with variability of winters in North America. Concurrent with the current negative swing of the SO Index is a significant eastward shift in the wind fields at 850 mb, a decrease in cloudiness and precipitation over Australia, New Guinea and Indonesia, and an increase in the magnitude and area of positive sea surface temperature anomalies in the eastern equatorial Pacific.

El Nino is generally referred to as an anomalous warming of ocean water temperatures off the coast of Ecuador and Peru in January, February and March. El Nino conditions are associated with a marked reduction in the catch of anchovies which comprise the world's largest single fishery resource. Thus it is economically significant, as well as being a significant climate event. It is a regional warming which is part of the overall large scale warming of the tropical Pacific Ocean occurring during drops in the S.O. index. At this time, warm water temperatures extend westward from South America to nearly the central Pacific. During such events there are also concurrent changes in the location of the Intertropical Convergence zone and the region of major concentration of equatorial precipitation moves eastward from Indonesia toward the international dateline. Current observations suggest that an El Nino type coastal warming may now be in progress.

The SO and El Nino are related and are part of the large scale atmospheric oceanic circulation. While new ideas have been developed that link these events to subsequent North American winters, the correlation coefficients are relatively low. In practice not all El Nino and SO events are associated with severe winters over North America. Figure 4 shows winter temperature patterns for the last eight major minimums of the S.O. index and accompanying El Ninos. There was a severe winter in the eastern part of the U.S. during the 1976-1977 El Nino event but not during 1972-1973. Exceptionally cold winters can occur in the absence of strong positive tropical ocean anomalies as was the case in 1978-1979 or with strong negative ocean anomalies as in 1967-1968.

WINTER TEMPERATURES (WARM EQUATORIAL PACIFIC SURFACE AND LOW S.O. INDEX)

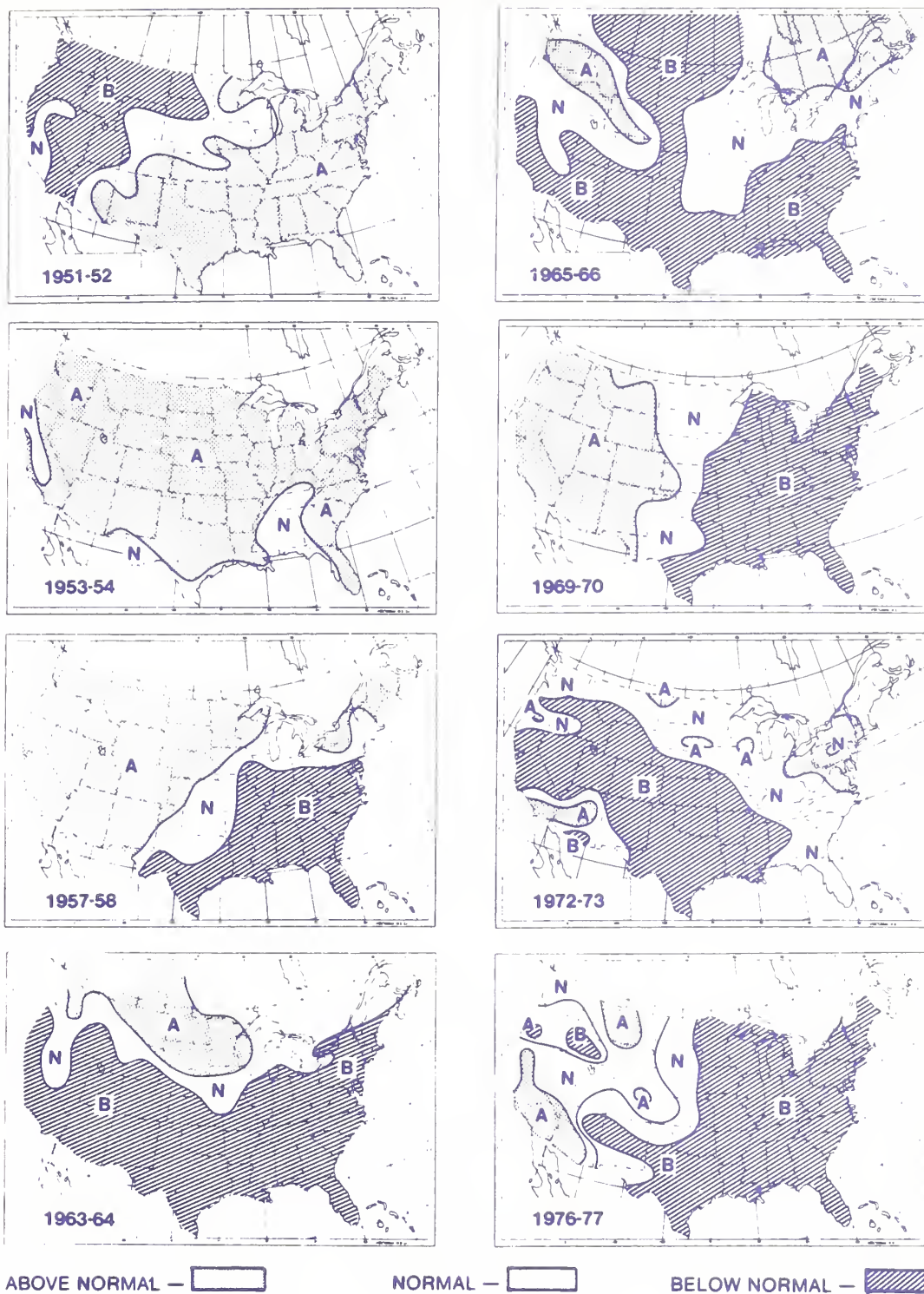


Figure 4

The NWS/CAC is closely following the current changes in the SO and El Nino. Major swings in the SO and El Nino usually follow an orderly evolution over a period of approximately 18 months. The evolution of the current situation has differed significantly from the eight other events which have occurred since World War II. The consequence of this development for this winter remains to be determined.

I emphasize that while no single index can capture the full variability of the climate system, the SO Index appears to be a clue to major changes in the tropical ocean and atmosphere and, when combined with other global changes, may be a "pacemaker" of interannual climate variability.

Volcanic action may affect current and future weather by the expulsion of dust which reduces the amount of solar radiation reaching the earth. One of the world's most spectacular events in 1980 was the eruption of Mt. St. Helens, and since then, in 1982, El Chichon has erupted in southern Mexico. It seems that El Chichon was not as great an eruption as Mt. St. Helens in terms of total amount of material blown from the mountain, but because El Chichon's blast was mostly vertical (whereas the Mt. St. Helens blast was mostly lateral) it placed a much larger amount of volcanic dust in the stratosphere where a large cloud has been observed. The possibility exists that El Chichon will, indeed, have weather and climate effects, but it is much too early to tell if global temperature changes will be measurable and what regional anomalies, if any, to expect. Preliminary simple energy balance modeling of the temperature effects due to El Chichon suggest a significant global cooling of .2 to .4°C over the next three years. However it will be extremely difficult to prove that any temperature changes observed this year are due to El Chichon because Northern Hemisphere surface temperatures were declining before the eruption occurred.

Solar Behavior. Some researchers claim to have found evidence of sun-related variations in weather and climate at periods ranging from less than a year to thousands of years. Because these relationships are so difficult to pin down and because it is not understood how the observed solar changes could produce major changes in the earth's climate, most meteorologists are skeptical. A few continue to use solar behavior as a climate predictor and have in fact predicted that this winter will be the coldest of the century for the eastern half of the U.S. However, these correlations, usually involving some solar index such as sunspot number, have not been subjected to independent and critical testing, and there is no evidence as yet to link them to long-range weather predictions.

In summary, Niels Bohr once remarked (in 1962) that "Prediction is very hard, particularly of the future." Climate prediction has proven an elusive problem but there has been progress and generally the skill of the NWS and our experimental forecast center are better than persistence or the climatic norm. But it is clear that many situations are not predictable, and prediction success differs among regions and among seasons. The central problem in climate prediction remains to determine more precisely the probabilities of occurrence of the abnormalities of temperature and precipitation. I think there are new opportunities for the future particularly in light of observations and theoretical considerations of such large scale phenomena such as monsoons and Southern Oscillation. There are however no short term or unique answers to the problem.

Providing Climate Services Through Federal-State Cooperation

The payoff from the experimental climate forecasting program will occur gradually, as more research is done and forecasting methods are improved. But economic and social benefits can be obtained now from efficient and timely climate services. A new means for providing these systems is provided in the National Climate Program Act, which authorizes establishment of Federal and State cooperative activities in climate studies and advisory services.

These cooperative activities were initiated through grants to States and the private sector for projects to demonstrate ways to provide climate services or to show the benefits to be gained from such services. Funding was not sufficient, nor do we expect it to be sufficient in the future, to support demonstration projects in every State. Nevertheless, I can report that the Act stimulated States' interest in providing climate services, and several of the demonstration projects are beginning to take shape as state or regional climate service systems where there were none before.

Our resources are insufficient to continue to support this demonstration phase while, at the same time, supporting formation of service systems. Accordingly, we will concentrate more of our effort, in the next 2 or 3 years, to support regional climate systems. Let me illustrate what I mean with two examples: First, the concept of regional climate services as exemplified by a consortium of states in the North Central and Northeast Region and, second, addressing a regional climate problem, as exemplified by plans for early warning and surveillance of drought in the Great Plains.

Regional Climate Services have been developed to aid in the establishment, improvement and expansion of a nationwide climate services system. A regional structure may be needed to help fill the void caused by the lack of state programs as in the case of the Northeast Regional Climate Center. This center also interacts with state universities and Agricultural Experiment Stations, acts as a resource for existing networks of agriculture experts, and provides quality climate information to other users in the region.

In the North Central United States, the regional climate activity is manifest in the Regional Climate Coordinating Office (RCCO). The primary purpose of RCCO is to improve the efficiency and effectiveness of the State Climate Centers, and establish more efficient communication channels between Federal agencies and cooperating States. The lines of communication between federal agencies and the states are not uniform (fig. 5). State climate services are almost non-existent in some North Central States; other states have minimal support for climatic activities; while others have strong research and service programs. An objective of the North Central Climate Plan, when fully implemented, is to provide a data and information communication system between federal, regional, and state agencies. The Regional Climate Coordinating Office will be the center for communications between federal, regional, and private user groups, and for coordinating regional data services and research on climatic effects.

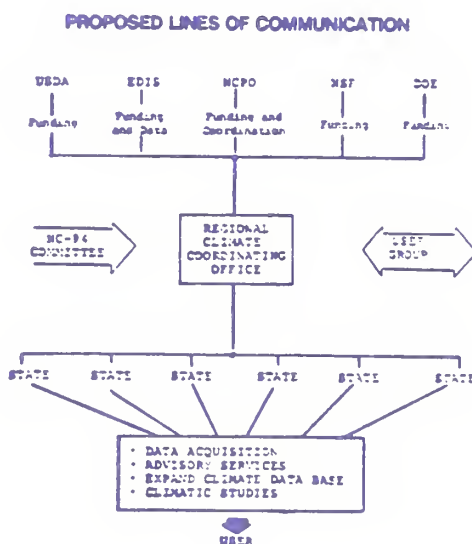
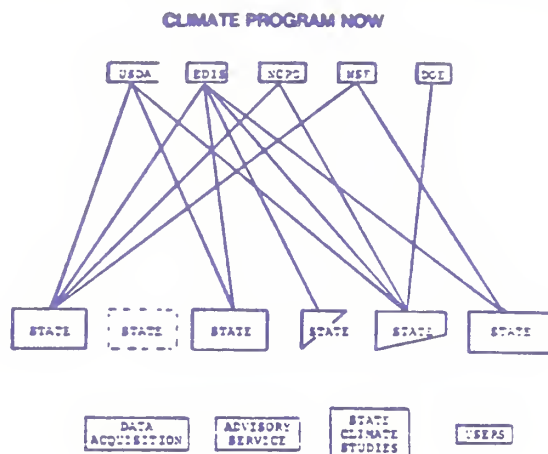


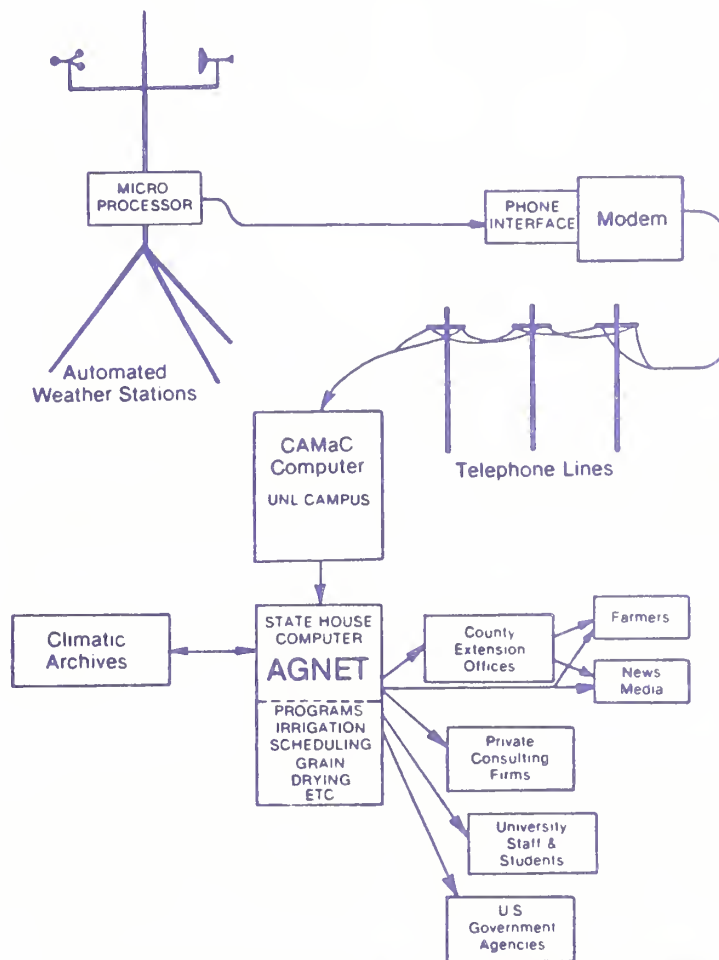
Figure 5

Regional Climate Problems. Sometimes a regional approach is the best way to attack a climate problem. The Great Plains States are frequently affected by droughts of varying severity which can develop slowly. The proper monitoring of climate conditions increases awareness of impending severe drought. This in turn would alert the authorities charged with administering programs aimed at mitigating the drought impacts.

An early warning and surveillance system is being developed in Nebraska to test methods for early assessment of drought and to regulate irrigation scheduling. With NCPO support, a network of five automatic weather stations to measure and report climate information was established in Nebraska. During the 1981 growing season the network collected hourly radiation data, wind direction, air temperature, humidity, soil temperature and precipitation. These data are stored in a microcomputer which can be accessed from Lincoln, Nebraska, where the data enter the already functioning agricultural

information network system and archive (AGNET). This system is tapped by county agricultural and irrigation consultants and individual farmers (figure 6). The new observations from these stations have already been used for irrigation scheduling by at least two consultant firms (one of which provides scheduling service for operators of 45-55,000 acres of cropland) as well as such other AGNET programs as drying grain and feeding beef. It is now proposed to expand the Nebraska network to include surrounding states and to develop indices of drought that can be used as quantitative measures to assess local or regional drought severity and aid in early identification of areas most affected.

The project is still in the planning stage. We expect that a limited scale test of a regional drought information system will be possible and may be sufficient for State and Federal agency feasibility assessment.



The computer at CAMaC (Center for Meteorology and Climatology) from field sites and links with routinely schedules the collection of weather data the State House computer, which has a wide user audience.

Figure 6

Helping Build Climate Service Systems

When the National Climate Program began 4 years ago, the most urgent task before us was to determine the Program's goals and priorities and to agree on Federal agency roles in carrying out the Program. We have proceeded well beyond that point and in so doing have identified user involvement as a major requirement for program success.

I have discussed our plans for seeking private sector support for climate forecasting research. The unique benefit of private sector involvement is the opportunity provided for direct interaction between users and producers of climate forecasts.

The climate service side of the program has a similar need for close involvement of users. There is an important rôle here for the State Extension Services to help establish state or regional climate services for agricultural, commercial and industrial users. Many of these users are farmers or businesses that serve them. I would be very happy to share with them our information about State climate services and programs, and our plans for encouraging the formation of State and regional climate service systems. We are in fact planning a workshop this winter to review our existing Federal-State Program and to evaluate how well the NCP is serving user needs for climate information and services. We will invite participants of this program and Federal and state officials to meet and assess the accomplishments of the past four years. Continued progress and the future health of the National Climate Program will depend on our success in working with intended users in developing service systems to meet their needs. I believe the climate data and information networks of the future will have to provide for greater coordination of NOAA, USDA and other agencies in meeting the national need for accurate and timely climate services.

Acknowledgments

Jay Winston and colleagues at the NWS/CAC compiled data used in figures 1-4, and Jay Winston and Don Gilman were especially helpful in reviewing the final manuscript. Howard Hill of the NCPO reviewed initial drafts of the manuscript and vastly improved its content, organization, and clarity. Information on the current developments of sea surface temperature anomalies in the Pacific Ocean is drawn from a Special Bulletin of the Climate Analysis Center (11/10/82), "A Major Warm Episode in the Eastern Equatorial Pacific Ocean."

WORLD TOBACCO OUTLOOK - Session 16

Kenneth E. Howland, Deputy Director for Marketing
Tobacco, Cotton and Seeds Division, FAS/USDA
1983 Outlook Conference

World economic recession, higher tobacco taxes and greater concern with the effects of smoking on health are expected to continue to affect tobacco consumption in major markets during 1983.

As a consequence, leaf trade may experience little overall growth and, depending on the size of the 1983 world crop and manufacturers' decisions with regard to inventory levels, downward pressure on leaf prices could result.

Leaf production in 1982 is estimated to total about 6.6 million metric tons, or about 11 percent more than in 1981. However, a large part of the increase is due to a 2 million ton crop in the Peoples Republic of China. Production outside of China rose by about 3 percent overall.

Production of light cigarette leaf - flue-cured, burley, and oriental-continues to expand both absolutely and in relation to other types, as consumption shifts from cigars and dark tobacco cigarettes to light tobacco cigarettes.

Flue-cured production is up by more than one-fifth, but 621,000 of the 658,000 tons increase is attributed to China's enormous crop. Flue-cured crops outside of China gained by a more modest 2 percent as larger crops in India, Brazil, Zimbabwe, Korea and Argentina more than offset a smaller quota and weather reduced yields in the United States and Canada.

Burley production this year will establish a new record of nearly 720,000 tons as producers in the United States and other main suppliers have responded to a perceived tight supply to produce a crop more than one-tenth larger than last year's.

The 1982 oriental crop is estimated to be about 7 percent larger, but short of average production for 1978-80. All major oriental producers harvested larger crops this year.

Production of most other types fell, reflecting the continuing decline in consumption of cigars and dark tobacco cigarettes that use much of these types of leaf.

Preliminary data indicates that world leaf trade in 1982 will fail to reach last year's record level. Exports may total less than 1.4 million tons, down some 90,000 tons from the total exported in 1981. Shipments by most major suppliers are expected to be off for the calendar year, as consumption in importing countries has been stagnating and manufacturers, in the face of higher interest rates and anticipated weaker demand for their products, have been working down stocks on hand.

On the imports side, it appears that among major importers, only the United States, Belgium and the Soviet Union may take significantly more leaf this year than last.

Cigarette output in 1982 is believed to be expanding at a slower rate than in 1981 and previous years. An overall increase of 1.5 percent in countries other than China may be about all that can be expected.

Substantial tax increases have dampened consumption in many European countries and production for export by the United States and other leading cigarette exporters is down due to world recession and its impact on travel and duty-free sales.

Indicative estimates of 1982 consumption and year end stocks show a moderate one percent growth in leaf consumption and stocks in countries other than the Peoples Republic of China.

The United States continues to play an important role in the world tobacco economy. But this role is changing. The United States now grows about 12 percent of the world flue-cured crop, down from 20 percent in 1978. Our share of burley production this year is about the same as that of 5 years ago - nearly half of the world crop.

The United States remains the leading exporter of both flue-cured and burley. But during the 1977-81 period, our share of exports of these types declined from nearly one-third to less than one-fourth of the world total. Although world exports of flue-cured and burley grew by nearly 150,000 tons during these five years, U.S. exports fell by 14,000 tons, or by the equivalent of more than 20,000 acres of production.

The United States this year is likely to become the leading importer of leaf tobacco. Arrivals could reach 260,000 tons, or nearly one-fifth of total world imports. Since 1977, the United States has taken nearly three-fourths of the net increase in imports by all countries, excluding China, where short crops in 1979 and 1980 led to sizable imports in 1980 and 1981.

This substantial swing in the U.S. trade position is largely due to the difference in price between U.S. leaf and that of major competitors. Countries that have gained share of world export - Brazil, Italy, Zimbabwe, Malawi, India - export their tobacco at prices significantly below the price of U.S. leaf.

Unless U.S./world leaf price relationships improve to the extent necessary to expand relative demand for U.S. leaf, it appears inevitable that in 1983 we will move further toward a net importer position, with production adjustments and/or stocks buildups implicit.

Cigarettes utilize more than eight-tenths of the tobacco consumed worldwide. In developed countries the proportion is even greater. Growth in cigarette output is therefore an important indicator of leaf demand.

Cigarette output in 1982 is probably experiencing slower growth than in 1981, when output rose by 1.9 percent outside of China, and by 4 percent including China.

Depending on the impact of higher taxes in the United States and Western European countries and the speed of recovery in world economic conditions, cigarette output in 1983 may expand by less than 1.5 percent, outside of China. Many developed countries may show no growth in cigarette production. Since cigarette manufacturing efficiencies are expected to continue to improve, no growth in cigarette production could mean negative growth in leaf utilization.

This has important implications for U.S. leaf trade. For the past several years, cigarette output in countries - EC, EFTA, Japan, Australia, New Zealand - which take more than two-thirds of U.S. leaf exports, has expanded at a rate of less than 1/2 percent. U.S. leaf has lost significant market share in all of them.

With little growth in cigarette output expected in these countries next year, it appears likely that export demand for U.S. leaf will be down in 1983, perhaps to around 250,000 tons for \$1.5 billion.

UNMANUFACTURED TOBACCO: ESTIMATED WORLD PRODUCTION BY TYPE
(THOUSAND METRIC TONS f.s.w.)

	<u>Average 1978-80</u>	<u>1981</u>	<u>1982</u>
Flue-Cured	2,582	2,951	3,609
Burley	575	640	719
Oriental	921	847	911
Other Types	<u>1,432</u>	<u>1,496</u>	<u>1,331</u>
Total	5,510	5,934	6,570

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UNMANUFACTURED TOBACCO: ESTIMATED PRODUCTION SELECTED COUNTRIES
(THOUSAND METRIC TONS f.s.w.)

	<u>Average 1978-80</u>	<u>1981</u>	<u>1982</u>
Canada	101	112	79
Mexico	74	70	76
USA	808	936	862
Argentina	64	51	69
Brazil	360	314	372
Turkey	246	180	210
Indonesia	116	120	115
India	462	456	470
Japan	155	138	140
Korea	113	87	109
Philippines	81	81	91
Thailand	80	81	97
China	1009	1500	2000
Italy	124	131	134
Greece	125	127	130
Bulgaria	144	141	156
Yugoslavia	62	73	75
USSR	291	285	300
Malawi	57	51	59
South Africa	43	29	36
Zimbabwe	108	69	92
Other Countries	887	902	898
Total	<u>5510</u>	<u>5934</u>	<u>6570</u>

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FLUE-CURED TOBACCO: ESTIMATED PRODUCTION SELECTED COUNTRIES
(THOUSAND METRIC TONS f.s.w.)

	<u>Average 1978-80</u>	<u>1981</u>	<u>1982</u>
Canada	99	111	77
USA	494	530	441
Argentina	34	32	41
Brazil	215	205	248
Italy	21	25	26
Bulgaria	21	25	30
Malawi	24	19	22
South Africa	27	19	24
Zimbabwe	106	67	89
Pakistan	29	25	29
India	136	110	156
Thailand	49	45	54
Philippines	42	38	47
Rep. of Korea	77	64	79
Japan	89	86	81
China	858	1279	1900
Others	261	271	265
Total	<u>2582</u>	<u>2951</u>	<u>3609</u>

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BURLEY TOBACCO: ESTIMATED PRODUCTION SELECTED COUNTRIES
(THOUSAND METRIC TONS f.s.w.)

	<u>Average 1978-80</u>	<u>1981</u>	<u>1982</u>
USA	247	331	352
Mexico	26	23	26
Guatemala	6	4	5
Honduras	4	5	5
Argentina	8	6	13
Brazil	34	20	33
Italy	51	50	53
Greece	20	21	22
Malawi	15	19	27
Philippines	11	13	13
Rep. of Korea	35	23	30
Japan	21	17	20
Others	97	108	120
Total	<u>575</u>	<u>640</u>	<u>719</u>

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ORIENTAL TOBACCO: ESTIMATED PRODUCTION SELECTED COUNTRIES
(THOUSAND METRIC TONS f.s.w.)

	<u>Average 1977-80</u>	<u>1981</u>	<u>1982</u>
Turkey	245	180	210
Greece	105	107	108
Italy	27	26	23
Bulgaria	120	112	122
Romania	26	20	27
Yugoslavia	42	48	50
Soviet Union	285	280	295
Other Countries	<u>71</u>	<u>74</u>	<u>76</u>
Total	921	847	911

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UNMANUFACTURED TOBACCO: ESTIMATED EXPORTS/RE-EXPORTS BY
SELECTED COUNTRIES
(THOUSAND METRIC TONS DECLARED WEIGHT)

	<u>Average 74-78</u>	<u>Average 79-80</u>	<u>1981</u>	<u>1982</u>
Canada	28	29	33	35
Mexico	21	28	18	15
USA	287	266	266	260
Argentina	22	20	17	24
Brazil	104	142	148	143
Greece	59	63	86	80
Italy	52	52	76	70
Bulgaria	68	66	65	60
Yugoslavia	23	25	22	23
Malawi	35	61	48	50
Zimbabwe	71	80	117	113
India	77	70	105	78
Indonesia	24	26	25	20
Rep. of Korea	45	34	38	27
Philippines	30	24	29	30
Thailand	24	36	37	40
Turkey	78	77	131	100
Others	286	262	225	227
World Total	<u>1334</u>	<u>1361</u>	<u>1486</u>	<u>1395</u>

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UNMANUFACTURED TOBACCO: ESTIMATED IMPORTS (ARRIVALS)
BY SELECTED COUNTRIES
(THOUSAND METRIC TONS DECLARED WEIGHT)

	<u>Average 1974-78</u>	<u>Average 1979-80</u>	<u>1981</u>	<u>1982</u>
USA	159	191	235	260
Belg-Lux.	39	38	34	38
Denmark	15	16	15	15
France	78	77	65	65
W. Germany	183	186	182	180
Greece	1	2	4	4
Ireland	11	8	7	7
Italy	30	31	23	21
Netherlands	63	75	71	70
U.K.	165	151	131	126
EC Total	(585)	(584)	(532)	(526)
Austria	13	13	14	11
Finland	8	9	12	10
Norway	6	6	6	6
Portugal	9	10	8	8
Sweden	12	12	11	11
Switzerland	30	27	27	27
EFTA Total	(78)	(77)	(78)	(73)
Spain	63	75	71	67
Czecho.	18	23	20	20
E. Germany	18	23	25	25
Poland	8	18	26	10
Soviet Union	77	75	86	90
Egypt	25	33	42	43
China	--	25	80	30
Taiwan	12	17	11	16
Hong Kong	7	9	20	10
Indonesia	11	16	22	25
Japan	89	70	84	85
S. Korea	6	14	13	6
Malaysia	6	4	3	6
Philippines	9	13	15	15
Singapore	8	9	7	8
Thailand	9	10	12	11
Australia	12	11	11	11
Total Above	<u>1200</u>	<u>1297</u>	<u>1393</u>	<u>1337</u>
Others	134	114	120	112
Grand Total	<u>1334</u>	<u>1411</u>	<u>1513</u>	<u>1449</u>

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UNMANUFACTURED TOBACCO IMPORTS TOTAL AND FROM US SELECTED COUNTRIES
(THOUSAND METRIC TONS)

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
EC 1/ (US)	512.7 (111.7)	625.0 (189.9)	577.8 (128.7)	519.3 (117.7)	506.6 (97.1)
EFTA2/ (US)	76.7 (28.0)	77.4 (26.9)	76.3 (25.1)	75.5 (16.5)	77.2 (23.2)
Spain (US)	60.4 (5.9)	60.3 (8.4)	73.4 (6.1)	77.1 (18.3)	71.1 (21.0)
Japan (US)	81.4 (55.3)	67.8 (37.7)	71.4 (39.8)	84.3 (49.6)	85.0 (50.3)
Taiwan (US)	11.5 (7.7)	16.8 (11.9)	19.0 (13.2)	15.2 (10.8)	11.3 (5.8)
Rep. of Korea (US)	6.8 (3.2)	10.1 (5.3)	12.9 (6.7)	14.4 (6.1)	12.6 (4.8)
Philippines (US)	10.5 (7.0)	10.2 (6.3)	11.0 (5.8)	13.9 (4.3)	15.4 (4.8)
Thailand (US)	11.4 (10.2)	8.6 (8.1)	9.3 (8.3)	10.6 (10.4)	12.0 (11.9)
Australia (US)	9.5 (6.5)	11.5 (5.5)	10.1 (5.3)	11.8 (6.2)	11.1 (5.1)
New Zealand (US)	4.4 (2.0)	2.8 (1.4)	3.5 (1.9)	3.4 (1.4)	3.5 (1.6)
Total Above (US)	785.3 (237.5)	890.5 (301.4)	864.7 (240.9)	825.5 (251.3)	805.8 (225.6)
USA	139.0	167.5	185.7	195.5	239.4
Other (US)	307.2 (23.3)	311.5 (52.4)	292.5 (28.7)	386.7 (20.2)	445.1 (26.5)
Total	1231.5	1369.5	1342.9	1407.7	1490.3

1/ Belgium, Luxembourg, Denmark, France, Greece, Ireland, Italy, Netherlands, We. Germany, United Kingdom.

2/ Austria, Finland, Iceland, Norway, Portugal, Sweden, Switzerland.

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CIGARETTE PRODUCTION SELECTED COUNTRIES
(BILLIONS OF PIECES)

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
USA	665.9	695.9	704.4	714.1	734.7
EC	549.4	561.6	567.2	568.3	559.1
EFTA	74.9	75.2	78.4	80.3	79.1
Spain	59.4	62.5	74.0	85.0	93.5
Japan	303.8	302.6	308.3	303.2	306.2
Taiwan	23.5	24.0	24.5	25.4	27.4
Rep. of Korea	60.0	62.8	64.4	70.4	72.2
Philippines	51.4	50.9	55.3	58.8	55.1
Thailand	27.0	24.0	28.0	30.5	33.0
Australia	32.9	33.0	33.0	35.2	35.2
New Zealand	<u>6.5</u>	<u>6.4</u>	<u>6.4</u>	<u>6.3</u>	<u>6.2</u>
Total Above	1854.7	1898.9	1943.9	1977.5	2001.7
China	576.0	591.0	651.0	760.0	866.0
Others	<u>1560.7</u>	<u>1583.7</u>	<u>1618.3</u>	<u>1646.4</u>	<u>1693.2</u>
Total	3991.4	4073.6	4213.2	4383.9	4560.9

Tobacco, Cotton and Seeds Division
Foreign Agricultural Service/USDA
November 1982

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Significant changes were made in the Federal Government's tobacco price support and production control program in 1982. A no-net-cost tobacco program was signed into law on July 20, 1982. Two major provisions of the new law are that producers have to contribute to funds or accounts to assure that price support loans are fully repaid and, the Secretary of Agriculture is given some discretion in setting price support levels. More detail on the no-net-cost program is provided later.

The U.S. tobacco outlook for 1983 is highlighted by declining demand; both domestic and export. Although this year's crop is down 6 percent from last year, total supply is larger because of larger carry-in stocks that resulted from last year's bigger crop and nearly stable use this year. The size of the 1983 crop will depend in part on USDA's decisions on quotas, which are due to be made by December 1 for flue-cured and by February 1, for burley and other kinds. Effective quotas are likely to drop below 1982 levels because quota carryover is expected to be reduced and the basic quota may also be reduced. The prospect, then, is for a reduced crop next year. Prices could increase some, but not likely enough to increase the total value of the crop.

Cigarette Sales Declining

Cigarettes are the dominant product of the tobacco industry in the United States and in most other countries. U.S. cigarette output may drop to 708 billion pieces this calendar year, about 27 billion pieces below 1981. The reduction will be the first since 1977. Cigarette consumption will likely drop for the first time in 4 years. Consumption per person in the U.S., 18 years and over, may drop by 4 packs, from 193 to 189 packs or to 3,778 cigarettes. Cigarette consumption continues to shift toward low-tar brands although the low-tar percentage is expected to increase only slightly this year.

Despite an increase in the smoking age population, both total and per capita consumption are expected to decline in 1983. Tax increases are primarily responsible for the expected decline. The federal excise tax will increase from 8 cents to 16 cents a pack on January 1, 1983, the first increase since 1951. Nine states also raised state excise taxes in 1982. State tax levies now vary from 2 cents per pack in North Carolina to 25 cents in Wisconsin. Further state tax increases are likely to occur in 1983.

Antismoking publicity and legislation continue to affect the industry. Many states, cities, and counties have laws that either prohibit smoking in certain places or segregate smokers from non-smokers. The U.S. Department of Health and Human Services and voluntary health agencies continue efforts to discourage smoking. The cumulative effect of publicity and ordinances on smoking is uncertain, although it may account for some of the downtrend in per capita consumption.

Wholesale cigarette prices were increased in February, in late August, and again in late September. Retail cigarette prices have risen about 10 percent this year.

Cigar and smoking tobacco consumption are also trending downward. Consumption of large cigars in 1982 will total about 3.6 billion, 7 percent below 1981 and less than one-half of the 1964 peak. Small cigar consumption may fall to 1.28 billion. Use of smoking tobacco in 1982 is down to 33 million pounds, a record low. Consumption of cigars and smoking tobacco may drop further next year.

Snuff production is up a little. Moist snuff production is up while dry output is down. Chewing tobacco production is also up. Output of loose leaf chewing tobacco is rising, but plug production is down.

Tobacco Crop Smaller

Tobacco production this year is down 6 percent from 1981 because effective quotas and acreage allotments were lower. Because of weaker demand, flue-cured prices only rose about half as much as they did last season. Flue-cured cash receipts from the 1982 crop were lower. The cost of producing and selling flue-cured tobacco rose about 5 percent per acre from 1981. However, total costs per pound rose even more because yields are lower.

As of November 1, the tobacco crop was forecast at 1.94 billion pounds. Despite the smaller 1982 crop, increased carryover means total supplies for the 1982/83 marketing year are up about 3 percent from last year.

Price support levels for both burley and flue-cured tobacco are 7 percent higher than last year. For both kinds, the supports were reduced by the full amount permitted under provisions of the no-net-cost tobacco law. Burley auctions opened on November 17 and prices may reach an all time high, surpassing the 1981 record of \$1.81 per pound. Cash receipts from the 1982 burley crop should increase.

At the beginning of the 1982/83 marketing year, unsold tobacco held under Government loan totaled 395 million pounds (farm sales weight), about 40 million below a year earlier. The reduction in flue-cured was due to sales of older crops. However, loan receipts from this season's flue-cured crop were 260 million pounds. The large jump this year, combined with the holdings of older crops under loan create a sizable oversupply. Prices of much of the flue-cured tobacco loan takings exceed the cost of comparable tobaccos from other countries.

The 1982 flue-cured auction season ended with a record auction price of \$1.79 per pound, 12 cents above a year ago. Grade prices were higher, except for primings.

Government price support is mandatory for tobacco produced under marketing quotas. For eligible 1983 crops, the overall price support under basic legislation will rise about 7-1/2 percent over 1982. This estimate is based on indicated changes in the parity index. As required by law, the price adjustment for 1983 will be based on the average of the parity index in 1980, 1981, 1982, compared with the 1959 index level. But, under the 1982 legislation, the support increases can be held to 65 percent of the amount permitted under the basic price support legislation. In 1982, both flue-cured and burley support increases were limited to the lowest amount permitted by law, leaving price supports 7.1 percent higher than a year earlier. In 1983, price supports for various types of tobacco may increase a minimum of about 5 percent to a maximum of about 11 percent (from the adjusted 1982 level to the full amount permitted under basic legislation), depending on the supply and demand for that type of tobacco.

Even though this year's flue-cured crop is smaller than last year's, the large carryover is bringing only a one percent decline in the 1982/83 supply from last year. The flue-cured effective quota had been reduced by 12 percent this year. With acreage and yields lower, growers sold about 16 percent less than in 1981. However, many flue-cured producers were left with tobacco in excess of 110 percent of their farm quota since fall leasing was eliminated with the 1982 law. Producers were permitted to arrange with the Flue-Cured Tobacco Cooperative Stabilization Corporation to process and store the excess production (carryover). Carryover tobacco is not eligible for price support until the next marketing year.

Under the acreage poundage-program, USDA is required to announce the national marketing quota for the 1983 crop of flue-cured tobacco by December 1, 1982. The 1982 quota was 1,013 million pounds, or about equal to prospective use. Still, current supplies equal about 3.1 year's use, compared with the desired supply of 2.4 year's, as provided for in the legislative formula. Since this season's marketings were a little above 1982's effective quota, the effective quota for 1983 will be lower than the basic quota.

The 1982/83 supply of burley tobacco is about 11 percent above last season. Carryover on October 1 was 12 percent above a year ago. This year's crop is the largest on record, 8 percent above last year. Acreage was up 1 percent and yields were up 7 percent. USDA regulations allow the crop to be sold in bales and most of it will likely be sold in that manner. Burley tobacco sold in sheets will not receive price support in 1982. Due to larger supplies, exports were higher in 1981/82, but domestic use declined. Carryover stocks next October 1 will likely rise further.

Legislation relating to burley tobacco requires that the national quota be at least 95 percent of the estimated disappearance for that year and at least 95 percent of the previous year's quota. With disappearance in the 605 to 630 million pound range in 1977-79 and again in 1981 (when supplies

were adequate), the 1983 marketing quota may be reduced from this year's 680 million pounds. The 1983 farm quota will be reduced by the production excess from this year's quota.

For both flue-cured and burley, USDA must proclaim quotas for the 1983-85 crops and hold producer referendums to decide whether producers desire quotas for their next three crops. The flue-cured referendum will be held in December and the burley referendum in February.

The 1982 Act authorizes growers of Kentucky-Tennessee fire-cured tobacco and dark air-cured tobacco to decide whether they want quota restrictions on an acreage or poundage basis. USDA will announce, on February 1, 1983, quotas on both an acreage and poundage basis and producers will vote, in special referenda, as to which option they prefer. Regardless of the outcome of the referenda, price support will be offered for the 1983 crop of these kinds of tobacco.

Supplies of fire-cured and dark air-cured tobacco are larger than last season. For cigar tobaccos and Southern Maryland, supplies are smaller.

NO-NET-COST TOBACCO PROGRAM

Section 1109 of the Agriculture and Food Act of 1981 (P.L. 97-98) expressed the intent of Congress that the tobacco program be operated with no-net-cost to taxpayers, other than administrative expenses.

In keeping with this intent, Public Law 97-218 was signed on July 20, 1982. The new law requires that to be eligible for price support, producers of all kinds of tobacco, beginning with the 1982 crop, contribute to a fund or account established by the cooperative associations that make federal support loans available to producers. For flue-cured growers, they must agree to make capital stock contributions to a no-net-cost fund handled by the Stabilization Cooperative (3 cents a pound in 1982). The contribution required of burley and other types of producers except flue-cured will be maintained by the Commodity Credit Corporation (1 cent a pound for burley in 1982). Beginning with the 1983 flue-cured crop, in addition to tobacco growers, farm owners with flue-cured quota who lease out will be required to contribute to the no-net-cost fund.

Another provision of the 1982 law gives the Secretary of Agriculture authority to reduce support rates for tobacco grades that are in excess supply, to make them more competitive. However, the weighted average support for all grades of any kind of tobacco must provide for at least 65 percent of the increase specified in the basic law.

For flue-cured tobacco the law provides, for the first time, authority for owners of allotments and quotas to sell these rights separately from the farms to which the allotments are attached. The allotments and quotas must be sold for use on other farms in the same county and must be active producers--that is, those who grow the crop or share in the financial risk of growing it.

The legislation requires that corporations, utilities, educational, and religious institutions, and other entities owning tobacco allotments, but not significantly involved in farming, sell their allotments by December 1, 1983. The allotments must be sold to active producers or people who plan to become active producers within the same county, or the allotments are forfeited.

Producers of dark air-cured and fire-cured (types 22 and 23) are given authority to adopt a poundage quota program. These types are currently under a program that controls only acreage.

Other provisions of the law include the following:

- o The marketing of floor sweepings by warehouse operators is limited to 0.24 percent of producer sales.
- o The maximum burley tobacco quota that may be leased and transferred is increased from 15,000 to 30,000 pounds.
- o For flue-cured, fall leasing of allotment and quota is prohibited except in cases of natural disaster.
- o The allotment on any flue-cured farm is limited to 50 percent of the eligible cropland.

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Federal Crop Insurance Corporation (FCIC)

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Washington, D.C. Session #17

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FCIC OVERVIEW

- Purpose of FCIC - "Promote the national welfare by improving the economic stability of agriculture through a sound system of crop insurance.
- FCIC is in a transitional stage. Our business has quadrupled since 1979.
- The Federal Crop Insurance Act of 1980 lifted many of the previous limitations that restricted the growth of the Federal Crop Insurance Program. The most significant areas affected by the Act of 1980 are expansion of crop insurance availability, changes in the delivery system, and expansion of the number of commodities available for insurance.
- The Corporation's insurance, which is referred to as an all-risk program covers unavoidable production losses due to any adverse weather conditions including drought, excessive rain, hail, wind, hurricane, tornado, and lightning. It also covers unavoidable losses due to insect infestation, plant disease, flood, wildlife, fire and earthquake.
- Federal Crop Insurance does not cover losses due to neglect, poor farming practices or theft. Nor does it cover financial losses resulting from low prices received for farm products. Participation in the program is voluntary and the producer must pay a premium for the protection.
- Farmers have 3 coverage level options: 50 percent of yield, 65 percent of yield, and 75 percent of yield.
- Premiums
 - Government subsidizes 30 percent through the 65 percent level of coverage.
 - Used only to pay losses and reserves for catastrophic losses.
 - Objective is 90 percent loss payout with 10 percent added to reserve for catastrophic losses. This means that over time for each 70 cents farmers pay as premium, at least 90 cents is returned as indemnity.
- Administrative expenses are not funded by farmer premiums. Congressional appropriations cover agent and company commissions, loss adjustment costs, all other operating expenses.

-- Delivery systems

- Reinsured private "policy issuing" companies

Provide: insurance marketing, distribution, servicing, training, quality control, premium collection, and loss adjustment functions.

Receive: FCIC compensation rates are 27 percent of premium for new business for agent commissions, company operating costs connected with handling the program and loss adjustment; 22 percent for carryover business; 4 percent of premium and 3 percent of losses for loss adjustment.

- Sales and Service Agencies (Master Marketers)

Provide: Manage insurance sales, services, and quality control for at least 25 agents.

Receive: 18 percent for new business and 13 percent for carryover.

- ASCS offices to a limited extent will provide some sales and service to 80 counties in the northeastern United States and 20 other marginal counties with limited agent interest. FCIC reimburses their expenses.

- Indemnity for losses is determined on a unit basis, occurs when production is less than guarantee, units of production are converted to dollars at pre-selected rate.
- Crop Insurance must be purchased before planting (there are specific deadlines by crop and county).

Premiums are due and payable at harvest.

Policy remains in effect unless cancelled by insured, FCIC, or if insured is indebted to FCIC for prior year at termination date.

- Information delivery and education is provided by FCIC employees and agents, ASCS county offices, and FCIC spokespersons. Studying expanding role for Extension Service. Contracting advertising through Marsteller Inc. of Chicago, Illinois for the period October 1982 to December 1983.

1983 PROGRAM IMPROVEMENTS

- Improvements in the Individual Yield Coverage Program (IYCP). This program allows farmers with above average production yields to receive protection based upon their individual yield records. Producers will find it easier to qualify for higher coverage under the revised yield formula.

- Changes in IYCP will make it easier for feedgrain producers who feed livestock to qualify for individual coverage.
- Changes in the corn and soybean contracts would eliminate coverage penalties for not harvesting, and provides for a replanting payment provision to cover the cost of necessary replanting.
- Stage guarantees have been revised in the cotton contract. Stage one coverage has been increased to sixty percent while stage two and three coverage has been set at full coverage. In addition, the definition of stage one coverage has been changed to end at the earlier of fifty days from the final FCIC planting date or cotton bloom drop.
- An extended planting insurance option program will be made available. The program provides producers coverage when they are not able to plant by FCIC's final planting date. Optional coverage is provided for up to a maximum of an additional twenty days. Premium levels per acre remain unchanged. However, yield coverage is reduced by ten percent for each five day period past the planting deadline.
- All Federal Crop Insurance sales agents and loss adjusters will be provided training and be required to successfully complete a certification exam. The exam will test their knowledge of the crop insurance program and individual crop contracts serviced in their areas.
- Require minimum financial standards for all sales and service agencies.
- Decrease the reduction in indemnity payment when a producer opts out of hail and fire coverage.

STRATEGIES AND TECHNIQUES FOR FARM MANAGEMENT DECISIONS

- 1983 requires tough financial decisions from farmers:
 - a sharp pencil must be used in making these changes;
 - these decisions are critical to the economic survival of each and every farmer and his family;
 - managing risks are more important than ever.
- Crop insurance permits the transfer of varying amounts of risk, and many crop insurance options are available which can complicate the decision process.

ONE NEW APPROACH TO THE SOLUTION

- The Cooperative Extension Service has worked with FCIC to use computer technology and risk assessment techniques as well as an analysis of the different crop insurance options.
- The computer program has been designed for use in specific individual farm basis; the sharp pencil approach was used.
- The software package for the microcomputer will be available at a nominal price.

CLOSING

- Not only farmers suffer the financial effects when crop disaster strikes, and not only farmers benefit from protection against the consequences of crop disaster.
- Creditors, lending institutions, businesses supplying agricultural needs and the entire community have a vested interest in the risk many plan of farmers.
- The Federal Crop Insurance program is designed to be a national self-help program with national and local benefits.
- In an era of concern about food costs, it is easy to lose sight of the fact that farmers are consumers too. In the course of a year, they spend more than \$136* billion on products needed for farming and an additional \$48* billion on the same kinds of products and services urban families buy.
- Most of the money farmers spend is for products which are produced by non-farmers.
- Farming is more than a way of making a living. It is also a way of living. Like other Americans, farm families strive to enjoy the satisfactions, the comforts and the ambitions that are the rewards of a job well done. Yet the constant threat and occasional reality of a crop disaster frequently deprive farm families of the opportunity to enjoy such rewards.

Even after a good year personal expenditures are sometimes tempered by the ever present fear that next year all farm families live in dread of. In this sense--a very real sense--FCIC can and will help to provide American agriculture with more than just business security.

- Federal Crop Insurance needs your support to make this new program a continued success, and we encourage you to consider the ultimate benefits to you, your community and the Nation.

*Farm population of the U.S., 1980, Current Population Reports, p27 No. 54, USDA, Economic Research Service, Department of Commerce, and Bureau of the Census.

Alan K. Hemphill
Dairy, Livestock and Poultry Division

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For Release:



The Foreign Agricultural Service has staff in about 65 countries which report on the major agricultural commodity of those countries. We receive reports from about 35 to 40 countries on the dairy, livestock and poultry commodities, the number varying slightly depending on the commodity. From a review of these countries, we believe that world production levels of meats will be below the previous year for 1982. Red meat and poultry production is not expected to advance noticeably in 1983. The current weak economic climate, in most countries is the pressing domestic consumption thus affecting both domestic productions and trade levels. Also the price relationships among the meats, and among forage/feedgrain are impacting on demand for particular meats.

POULTRY

A softening of demand, particularly in the middle Eastern countries has dampened expansion plans in exporting countries such as Brazil, France, and the United States. Weaker domestic demand, and in turn, domestic consumption, have also hurt production in many countries including the United States. Worldwide production of poultry meat in 1983 is forecast to increase about 2 percent over 1982 output, but this will still not bring total meat production to the 1981 level. This rate of expansion for poultry is well below the average of recent years. Current forecasts are that global (the countries reviewed) production of poultry meat will be 22 million metric tons (MT) for 1982 and 22.6 million MT in 1983.

In the United States low prices are holding 1982 poultry production to a 1 percent increase in 1982 and forecasts for 1983 call for a 2 percent further increase. An absolute decline in turkey production is one reason for 1982's low growth, but it should recover in 1982.

Egypt was the largest market for U.S. exports of whole broilers in 1981. However, during the first nine months of 1982, Egypt did not import this commodity from the United States. Several factors have contributed to the decline in U.S. exports to Egypt. The strengthening of the U.S. dollar and Egyptian shortage of foreign exchange have had a negative impact on U.S. exports of all commodities. In addition, in February of this year Egypt imposed a ban on imports of frozen chickens and table eggs from all sources. Currently, imports of frozen chickens and small amounts of table eggs have resumed, but tenders have gone, for the most part, to Brazil a country that subsidizes exports, hence one that is capable of offering very low prices.

In Brazil, poultry exports are expected to show a 5 percent increase at the end of this calendar year compared to last year. This is far below the pace that Brazil's poultry industry maintained during the late 1990's. Prospects for the near future does not anticipate a return to such rapid growth. While exports will rise 5 percent, production is expected to rise 7 percent. Brazil's economy is in a substantial recession, and compounded by a world recession, expansionary tendencies have been dampened.

The government of Brazil offers incentive programs by providing concessional credit to both producers and exporters. This has assisted Brazil's export ability and has helped to attract overseas markets -- most notably in the Middle East. Brazil's major competition for the Middle Eastern market has in the past been the United States, but more recently it has been the European Community. In 1981, over 80 percent of Brazil's total exports were to the Middle East, with primary markets in Saudi Arabia, Iraq, Egypt, and Kuwait. Since 1980, Brazil has also supplied the Soviet Union with a growing share of their poultry imports. Brazil has concluded contracts with Iraq which is making it the dominant supplier of broilers and table eggs in 1982 and probably 1983.

EC poultry exports to third country markets, led by large French broiler sales to the Middle East, improved significantly in 1982. However, export gains in 1983 should be somewhat less as major increases in demand in importing countries are not anticipated at present. The relative strength of the dollar has dampened demand for US goods, and because of this, not only are EC poultry products more attractive, but the subsidies offered have probably increased less than they would have otherwise.

Poultry production in France is expected to expand by 20 percent in 1982, compared with 1981 levels. Nearly all of this production will be marketed through exports with the majority headed for Middle Eastern markets. France's large expansion in export trade is attributable to its liberal subsidy policy. Prospects for 1983 call for an increase in production and exports of only 3 percent as a response to the slack demand is seen.

BEEF

World trade in beef and veal declined slightly in 1982 as production in a number of countries dropped. World production of beef and veal in 1982 are expected to reach 40,560 million MT compared to 40,580 million MT in 1981. Forecasts for 1983 call for levels to remain virtually the same at 40,560 million MT.

U.S. beef and veal exports may rise 10 percent in 1982. Shipments to Japan, which has an MTN agreement to increase imports of high quality beef, are expected to provide most of the gain. U.S. exports in 1983 are seen rising another 7 percent with Japan once again stepping up imports of high-quality beef. The current negotiations with Japan could modify this although most effect could be expected in future years.

The United States remains a net importer of beef. Australia's drought and the increasing value of the dollar have encouraged higher imports of lean beef for manufacturing this year even though prices are low. Total beef imports in 1982 are expected to rise 10 percent, over last year's level. During September and October, Australia, New Zealand, and Canada agreed to restrain their exports to the U.S. in order to avoid exceeding the Meat Import Law 1982 trigger level of 1.3 billion pounds. Shipments in excess of agreed levels are likely to be put into bonded storage. The release of these stocks in 1983 will boost beef imports early in the year, but total imports for the year are seen falling as trade and production in Australia and some other countries resume more normal patterns.

In Australia, cattle slaughter is estimated to be 8.8 million head in 1982. Drought conditions that have decimated grazing capacity in the major producing areas of New South Wales and Queensland have forced liquidation. Such high slaughter levels have pushed cattle numbers down--to approximately 23 million from over 33 million in 1976.

For 1983, beef exports from Australia are expected to decline. However, weather will continue to be a factor. Assuming a return to more normal weather patterns, the slaughter rate is expected to decline around 10 percent, with a similar decline in beef and veal production. It is anticipated that export levels for 1983 will approximate 720,000 MT, a reduction of over 5 percent from 1982 levels.

In New Zealand, where the cattle industry suffered somewhat from drought and the ensuing pasture deterioration, slaughter and production are expected to increase 2 and 4 percent, respectively, for 1982. Almost all the additional beef produced has entered the export market, and much of this to the United States. Exports to the U.S. reached a level where, with voluntary restraints, imports no longer entered for consumption after early October. It is calculated that without the VRA, New Zealand's exports would have been 10 to 15 percent above permitted levels. For 1983 it is anticipated that exports will be down somewhat. This is premised upon cattle numbers remaining at the 8 million head level, hence a decline in slaughter and production of 3 and 4 percent, respectively. Both Australian and New Zealand beef export levels are affected to some extent by world sheepmeat demand.

Argentina's beef exports, slated earlier to reach last year's level of 500,000 MT, may have difficulty in attaining this. The two-tiered exchange policy initiated by the government in July has recently created havoc for exporters. Apparently, the financial or purchase rate of the peso exceeds the commercial or selling rate, and shipments to the Middle East as well as the Soviet Union have been slowed. High domestic prices combined with the government's requirements for utilizing the commercial exchange rate for export sales have caused beef export profit margins to disappear.

The constant change in policy by the government of Argentina makes the 1983 prospects difficult to discern; however, livestock retention is forecast to continue, somewhat limiting the beef supply for consumption and exports. Major customers will continue to be the Soviet Union and the European Community.

EC exports of beef and veal to third countries hit near record levels in 1981, but are projected to drop significantly in 1982. Sluggish world demand and a reduction in EC exportable supplies due to a sharp decline in EC beef intervention stocks during the first half of 1982 are the major causes of this drop-off in exports. From a high of over 300,000 MT (PWE) at the beginning of 1981, EC intervention beef stocks fell to around 40,000 MT in the spring of 1982 as relatively strong cattle prices reduced intervention purchases. The lower stock levels will likely continue to affect EC exports into 1983. EC imports of fresh and frozen beef from third countries, most under concessionary arrangements, are not expected to change greatly in 1982. However, prepared and preserved beef imports should be down, primarily due to reduced U.K. imports of corned beef from Argentina.

Japanese beef imports slumped 8 percent in the first 8 months of 1982, but are expected to match the 1981 total by year's end. Its MTN agreement with Australia, providing for an expansion of import quotas to 135,000 MT in Japanese fiscal year 1982 (ending in March 1983) will encourage higher imports in the last half of 1982 and should facilitate an 11 percent boost in 1983 imports. Future beef imports may be affected by the outcome of negotiations in which the United States is seeking liberalization of Japanese beef import policies.

PORK

World trade in pork is expected to decline in 1982. Much of the decline in trade is attributed to East Germany where exports dropped almost 70,000 MT. On the import side, Japan's purchases during 1982 have been particularly low, falling almost 55,000 MT. Prospects for 1983 do not call for any significant change from 1982 levels. Exports are expected to remain below 1981 levels and imports are anticipated to fall below the weak 1982 numbers.

The U.S. balance of trade in pork will worsen in 1982. Declining production, higher prices, and a stronger dollar may reduce exports by 20 percent and boost imports especially from Canada by 10 percent. In spite of reduced competition from Denmark (as a result of an outbreak of hoof and mouth disease), U.S. pork exports to Japan have been adversely affected by higher prices, a weaker yen, and increased competition from Taiwan, Canada, and some Scandinavian countries. In 1983 U.S. pork imports may slacken off by 8 percent while exports should rise about 2 percent. However, this 1983 trade situation hinges upon the direction U.S. pork production takes. Presently, production levels are low, but an upward swing is anticipated for 1983.

Japanese pork imports are expected to fall 20 percent in 1982 following last years record high imports. A 3 percent increase in domestic production, stagnating consumption, higher world prices resulting from lower supplies, and a weakening yen have contributed to the decline in imports. Japan's ban on imports of fresh, chilled, and frozen pork from Denmark will be reviewed in the near future, but it is likely to remain in effect into 1983. Japanese pork imports in 1983 are seen falling another 7 percent as production gains 2 percent and consumption remains relatively flat.

Total EC exports of pork to third countries are expected to decline in 1982 as Danish exports of fresh pork to Japan have been halted since the outbreak of hoof and mouth disease earlier this year. Exactly when Denmark will be able to recommence pork shipments to Japan is uncertain; however, the ban could run through the first half of 1983.

LAMB, MUTTON, AND GOATMEAT

World trade in lamb, mutton, and goatmeat will increase in 1982. An increase in exports from New Zealand was almost offset by a decline from Australia. While other countries of the world were almost the same in numbers, exports from Turkey doubled as more moves to its neighbors.

In New Zealand, production levels are expected to be down slightly this year, while exports are up. Much of this stronger trade has been generated by low prices and the New Zealand Government's minimum guaranteed price schemes that encourage production. As a result, flock numbers have continued to expand in 1982 from the 70 million head level on January 1, 1982, even though dry conditions are affecting numbers in some areas.

In Australia the sheep industry, which is primarily concerned with wool production, remains quite profitable due to benefits of a wool stabilization scheme, guaranteeing producers a minimum price. In spite of the fact that both lamb and mutton prices have fallen in 1982, sheepmeat production remained steady though flock numbers declined slightly due to drought conditions. It is anticipated that inventory figures on January 1, 1983 will show sheep numbers close to the 136 million mark.

For 1983, wool prices in Australia should continue to be an incentive to build sheep flocks as government price supports lessen the risk to producers. Demand for live sheep is expected to continue high from the Middle East. Both of these factors should help continue the trend towards expansion in the sheep industry.

EGGS

Global egg production is forecast at 355 billion units in 1982, an increase of 5 billion pieces over 1981. This increase is comparable to those of recent years despite reported low prices to many producers. Expansion was largely in Japan, following last years decline; in the EC, to meet export demand, and in the USSR, to meet the annual plan.

From the above we can see that a large number of factors affect world production and trade. The most important is the weak world economy depressing demand. Changes in exchange rates and use of subsidies by some countries have also impacted. Weather and other situations of course have their effect. All of these are combining during this time to depress world livestock production and trade.

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For the second consecutive autumn, the outlook for the red meats industry is clouded by the uncertain economic outlook. In addition, many livestock producers, particularly those on mixed crop-livestock enterprises, have had cash flow problems. Despite low grain prices, producers have been more interested in reducing debts and improving cash flow than in expanding herds. This trend continued through fall, as many farmers attempted to generate internal capital for harvest expenses. Gilts have been sold, rather than retained for the breeding herd. Cow herds in many areas are being closely culled or liquidated, particularly where cattle are a supplementary enterprise. Consequently, total red meat production will likely decline for the second consecutive year in 1983.

FACTORS AFFECTING THE RED MEATS INDUSTRY

The Economy

The economy continues to perform sluggishly despite the July 1 tax cut. The unemployment rate has risen above 10 percent and at the same time, the average length of work week for those who are employed continues to decline. The end result has been a dramatic slowdown in the rate of increase in real income. Real per capita incomes in 1982 (measured in 1972 dollars) are expected to have risen only about 1 percent from 1979. By mid-1983, though, the economy is expected to show signs of expansion. At this time, the length of work week should begin to rise, and with this rise should come higher incomes. If these developments occur, they should give consumers tangible evidence of a sustainable recovery. The July 1, 1983 tax cut should give consumers additional reason to loosen their purse strings.

Production Costs Decline

Lower prices for agricultural inputs and a slower rate of increase in nonagricultural costs have been favorable for producers over the last year. The prime interest rate has declined sharply from the 18.9 percent average in 1981 and the 16.5 percent average this spring to the present rate of 11.5 percent. The rate of increase in the Producer Price Index has been cut in half, with a 4 to 5 percent rate of increase expected this year, compared with 9.2 percent in 1981. Interest and inflation rates are likely to continue near present levels in 1983.

This fall's domestic harvests are again record large. In addition, reduced U.S. feed grain exports and only a small increase in feed use have resulted in feed grain carryover at the beginning of the 1982/83 feeding year more than double last year's total. Only modest increases in exports and feed use are expected in 1982/83. Consequently, the farm price of corn may average \$2.15 to \$2.35 per bushel, compared to \$2.45 in 1981/82 and \$3.11 in 1980/81. The mid-October farm prices of corn in Indiana, Iowa, Georgia, and Texas, were \$1.89, \$1.95, \$2.23, and \$2.62 per bushel, respectively, showing the sharp contrast in prices between the surplus Corn Belt and deficit feed grain areas. The farm price of grain sorghum may average \$3.85 to \$4.10 per cwt this year, compared to \$4.02 in 1981/82, and \$5.25 in 1980/81.

A record-large soybean harvest and a sharp increase in ending stocks have resulted in large soybean meal supplies at lower prices. Soybean meal prices at Decatur are projected to average \$150 to \$175 per ton in 1982/83, compared to \$182.50 last year and \$218.20 the year before last.

Forage supplies in most areas of the country are quite adequate for the smaller cattle inventory entering the winter feeding season. Pasture and range feed conditions on November 1 were even with last year's average but slightly above the 10-year average. Conditions in the Southeast were much improved over the drought situation of last year. However, parts of the Pacific Northwest may have problems because of a smaller crop of poorer quality hay harvested this past summer. Additional rains are needed in the Southern Plains, but conditions have improved. The main uncertainty at this time is wheat pasture development in the High Plains. Wheat pastures in mid-November provided limited grazing due to the poor moisture conditions throughout most of the High Plains wheat grazing area.

Hog production costs have declined sharply during 1982, with the largest year-to-year reductions occurring in the first half of this year. Feed costs have been cut \$5 to \$7 per 100 pounds of grain. Farrow-to-finish and feeder pig production operations have benefited the most from the lower costs. However, for those who buy feeder pigs for finishing, the price of feeder pigs has risen \$15 to \$20 a head in 1982. Costs of production for all hog producers in 1983 should rise only modestly as grain prices remain favorable.

Similarly, cattle feeding costs have declined about \$10 per 100 pounds of grain between 1981 and 1982. At the same time, feeder cattle prices have declined slightly, and interest rates have dropped. Production costs are expected to rise in 1983 as feeder cattle prices increase, because of reduced supplies. However, lower feed costs through at least spring, and little change in interest rates, will help offset feeder cattle price increases.

Costs of producing feeder cattle have been aided by the slowdown in the general inflation rate and much improved forage supplies in 1982. The rate of cost increases should continue to moderate in 1983 as most producers hold down inventories and thus have excess forage supplies.

Normally, large crops and lower prices favor expanded livestock production. However, the poor financial situation for many producers, particularly on mixed crop-livestock farms, has resulted in the selling of livestock to improve cash flow, which at the same time reduces feed use.

EXPANSION STALLS

The result of financial pressures and economic uncertainty has been a reluctance to expand. Producers have been concerned with reducing debts and improving cash flow, particularly in the mixed crop-livestock production areas. Selling the gilt or cow has been viewed by many producers as a better choice than the uncertain returns in the future.

Hogs

Some Hog Expansion Expected

Feeding margins have been positive since early this year, and are expected to remain positive in 1983. Although feeding margins improved in 1982, producers continued to liquidate their herds. The inventory of all hogs and pigs on June 1 was down 13 percent and was the lowest June 1 inventory since 1975. During the summer quarter, hog prices were record high. In addition, corn prices declined as export demand weakened, and the likelihood of a record-large corn crop increased. However, the September Hogs and Pigs report indicated that the breeding herd in the 10 quarterly reporting States was down 13 percent from a year earlier, and producers indicated intentions to have 10 percent fewer sows farrow during September-November. Producers also indicated intentions to farrow 4 percent fewer sows in December-February.

Actual farrowings may differ from these reported intentions. Although gilt retention has not started as might be expected, some producers are expected to rebuild breeding herds, especially after the corn harvest ends in late November. The end of the corn harvest will reduce the need for cash to cover current operating expenses.

Pork Production Continues Decline

Commercial pork production in the fourth quarter of this year is forecast to total 3,500 million pounds, down 16 percent from a year earlier. Fall hog slaughter is drawn from the inventory of market hogs weighing 60 to 179 pounds on September 1, and that figure was down 12 percent from a year earlier. In December 1981, producers were liquidating their breeding herds because of low hog prices. However, this fall, sow slaughter has declined, and gilt retention is expected to rise--both factors will hold down hog slaughter.

Hog slaughter in the first half of 1983 will be drawn from the June-November 1982 pig crop. The U.S. breeding hog inventory on June 1 suggested that the June-August pig crop in the nonquarterly reporting States probably declined more than in the 10 quarterly States. The

inventory was 10 percent below a year earlier in the 10 quarterly States, and was down 15 percent in the nonquarterly reporting States. On the same date, the producers in the 10 quarterly reporting States indicated intentions of having 9 percent fewer sows farrow during June-November, while producers in all States indicated intentions of reducing farrowings 10 percent.

Commercial pork production in the first quarter of 1983 is forecast to be down about 10 percent from a year earlier. Hog slaughter during the quarter is drawn primarily from the number of hogs weighing under 60 pounds on September 1 of the previous year. This weight group in the 10 quarterly reporting States was down 12 percent from a year earlier. Hog slaughter may not decline as much as suggested by the inventory change, though, because last year's harsh winter weather reduced barrow and gilt marketings.

Hog slaughter in the second quarter is drawn largely from the September-November pig crop. As indicated earlier, producers in the quarterly reporting States indicated intentions to have 10 percent fewer sows farrow during this past September-November. Hog slaughter in the second quarter is currently projected to be 6 to 8 percent below last year. But, the severe winter weather in January and February 1982 that slowed rates of gain caused some hogs that normally would have been marketed in the second quarter to be sold in the third quarter. Thus, slaughter in second-quarter 1983 is expected to decline 6 to 8 percent from this lower base.

Commercial hog slaughter in second-half 1983 may be 2 to 4 percent above a year earlier. Second half hog slaughter will come primarily from the December 1982-May 1983 pig crop. As of September 1, producers in the 10 quarterly States indicated intentions to reduce the number of sows farrowing during December 1982-February 1983 by 4 percent from a year earlier. The first farrowing intentions for March-May, as well as U.S. intentions for December 1982-May 1983, will be released in the December Hogs and Pigs report.

Given the relatively short supply of pork and an improving economy, hog prices may be in the mid-\$50's next fall. Corn at the farm will probably be near the loan rate of \$2.65 per bushel, if weather conditions are about average. Under these conditions, the hog-corn price ratio would be in excess of 20 to 1. Prospects of this ratio over 20 to 1 should encourage modest expansion by producers who already have facilities and are currently producing hogs. On balance, the December-May pig crop is expected to rise only modestly, instead of increasing sharply as in the past, following a period of high hog-corn ratios.

Total commercial pork production for 1983 may be 13.5 billion pounds, down 3 percent from 1982. This would be the third consecutive year of decline after the record-large 1980 output.

Cattle

Cattle Inventory Steady

All evidence indicates that expansion in the present cattle cycle has ceased in 1982. It began in 1979. The July 1 cattle inventory declined 1 percent from a year earlier, while the beef cow herd dropped 4 percent. The 1982 calf crop is expected to decline 3 percent--1 million head. Cow slaughter through September has been 10 percent above the relatively lower levels of a year ago. However, slaughter has been sharply higher in the Lake States-Corn Belt (19%), Southeast (16%), and Pacific Northwest (28%) regions. These three areas tend to have a larger number of mixed crop-livestock operations, where the cattle enterprise tends to be supplementary. Forage shortfalls in the Southeast and Pacific Northwest also undoubtedly contributed to the inventory reduction. Forage supplies have been rebuilt in the Southeast, but the Pacific Northwest may continue under pressure, particularly if this is a severe winter, requiring more supplemental feeding. In the remaining regions, cow slaughter has risen less than 5 percent over the relatively low levels of 1981. Cow slaughter in the Southern Great Plains declined 2 percent, while slaughter in the Central Great Plains rose 4 percent. However, slaughter has risen above seasonal levels in both of these areas this fall as the spring calf crop was weaned and grazing conditions deteriorated, particularly in the Southern Great Plains, due to dry weather.

Consequently, the inventory of cattle and calves on January 1, 1983 is likely to be unchanged to down 1 percent from this year's 115.7 million head. Total cow numbers are likely to be down about 4 percent from the 50.4 million head at the beginning of the year, with all the decline coming from the beef herd. While expansion of cattle numbers could resume in 1983, there is a greater possibility that cattle numbers will remain the same or, perhaps, show only a slight decline next year.

The primary reason for the sharp culling rate increase, or even herd liquidation, is the weak financial situation in the agricultural sector. Farms and ranches where income from the cattle enterprise is supplementary are reducing herd size to improve the cash flow or to reduce indebtedness, to save the primary source of income--the cropping enterprise. On farms and ranches where the cattle enterprise is a primary source of income, or the only source, cattle numbers are more likely to be maintained, with only cows which did not rebreed being marketed. With grain prices expected to remain relatively low until at least mid-1983, and only a sluggish economic recovery expected, cattle numbers are likely to show little change during 1983. However, the stage may be set in the second half of 1983 to encourage producers to expand in 1984.

Feeder Cattle Supplies Tighten

The supply of feeder cattle outside feedlots on October 1 was 1 percent smaller than a year ago. Calf numbers were unchanged, while yearling numbers declined 7 percent. However, more animals from the slaughter mix are being shifted to feedlots. Profits through much of this year have encouraged a shift away from nonfed steer and heifer slaughter to increased feedlot inventories, a trend which continues this fall. Nonfed steer and heifer slaughter declined about 200,000 head from a year ago during the summer quarter, and even larger declines are likely this fall. Calf slaughter is also likely to decline later this fall and into 1983. Consequently, feedlot placements this fall will remain large, increasing the number of cattle on feed on January 1.

However, with the 1982 calf crop 1 million head smaller, and fewer yearlings outside feedlots on October 1, the feeder cattle inventory is clearly moving down. With the smaller cow herd expected on January 1, an even smaller calf crop and, therefore, feeder cattle supply is likely in 1983. Evidence of a stronger economic recovery next spring could encourage retention of larger numbers of heifers, particularly where the cattle enterprise is a primary source of income, tightening feeder cattle supplies even more.

Beef Production

The number of cattle on feed in the 13 major feeding States was 7 percent above a year ago on October 1, and will likely remain above 1982 levels each quarter during 1983. However, because of reduced feeder cattle supplies and smaller feedlot inventory at the beginning of 1982, the year-to-year increase in the inventory will decline from the larger number expected at the beginning of 1983 to only slightly above a year earlier next fall. The general slowdown in inventory buildup occurs because the shift away from larger numbers of heavier yearling cattle outside feedlots to reduced slaughter of nonfed steers and heifers will be fairly well completed this fall. Further increases in placements will have to come from placing lighter cattle on feed. Marketings may rise 6 to 8 percent above a year earlier in first-half 1983. Feedlot placements may remain near to slightly above year-earlier levels through winter. However, placements through the remainder of the year may fall 1 to 4 percent below this year's large level. Consequently, marketings in the second half of 1983 may fall 1 to 3 percent.

For the year, fed cattle slaughter may rise only 1 to 2 percent, with all of the increase in first-half 1983. Nonfed steer and heifer slaughter is likely to decline another 15 to 20 percent from this year's 2.9 million head. Cow slaughter also is expected to decline, particularly beginning next spring. Slaughter is likely to decline 5 to 6 percent, with about 14 percent of the smaller January 1 cow inventory being slaughtered, compared to nearly 14.5 percent slaughtered in 1982.

Fed Beef Output Rises; Nonfed Declines

Cattle slaughter may fall 1 to 2 percent in 1983, with only about a 1-percent decline in production as slaughter weights rise modestly above the low 625-pound 1982 average. A larger proportion of beef production in 1983 will be fed beef, as all nonfed categories are expected to decline. Production may rise about 2 percent above 1982 levels in the winter and spring quarters. Third-quarter production will rise seasonally, holding down price gains, but it will likely decline about 1 to 2 percent from this summer's level. Sharpest year-to-year declines will occur next fall, when production may drop 4 to 5 percent below this year's level, and 2 to 3 percent below summer's. The drop will be because of both smaller numbers of cattle placed and the fact that a larger proportion of the placements in the spring and summer quarters will be calves, which take longer to reach slaughter weights than the heavier yearlings.

Veal

Calf slaughter rose 11 percent in 1982, but is expected to decline next year. Smaller calf crops in 1982 and likely in 1983 will continue to tighten feeder cattle supplies. Consequently, more of the calf crop will be shifted into stocker production or placed on feed. Veal production is likely to decline 8 to 10 percent.

Lamb and Mutton

Commercial lamb and mutton production is increasing for the third consecutive year, after many years of decline. For the first 9 months of 1982, production was up 10 percent. The largest year-to-year increases in slaughter were in the Pacific and eastern Corn Belt regions. Fourth-quarter lamb and mutton production is forecast to increase 2 to 4 percent over a year ago. For the year, lamb and mutton production may total 353 million pounds, up 8 percent from 1981. Production may rise another 5 percent in 1983.

Red Meat Consumption To Decline

Per capita 1983 red meat consumption on a retail weight basis is expected to be at the lowest level since the mid-1960's, as it was in 1982. Pork consumption may average slightly below 55 pounds, the lowest level since 1976, when 53.7 pounds were consumed. The only lower figure since 1970 was the 50.7 pounds consumed in 1975. This year marks the third consecutive one of reduced pork consumption, and about a 13-pound decline from the 68.3 pounds consumed in 1980. Pork imports may decline modestly from the 600 million pounds expected this year to about the 550-million-pound levels of 1980 and 1981. Pork exports may remain near this year's estimated 245 million pounds.

Beef consumption next year may average about 76 pounds per capita, 1 pound below this year's average and almost 20 pounds below the record 94.4 pounds consumed at the peak of the cattle cycle's liquidation

phase. This 1983 figure may well be the lowest beef consumption since 1965. Beef supplies will be lower not only because of reduced production, but also because of a decline in beef imports from the 1.9 billion pounds expected for 1982.

Beef exports are expected to increase in 1983. Exports have risen each year since 1976. However, they still represent only about 1 percent of commercial production, compared to 7 to 9 percent for imports. Imported beef is primarily lower quality processing meat, whereas exports tend to be higher quality fed beef for use in the international hotel and restaurant trade.

Per capita veal consumption on a retail weight basis may average about 1.5 pounds in 1983, the same as in 1982. Veal slaughter remains low, as it has since 1979, because of smaller calf crops at this stage of the cattle cycle. Lamb and mutton consumption is expected to continue the slow rise which began in 1979. Consumption has risen from 1.3 pounds per capita in 1979 to 1.5 pounds in 1982. It is expected to be 1.5 pounds again next year. Imports are expected to remain near this year's 20 million pounds, well below the 32 million average recorded in 1980 and 1981.

RED MEAT PRICES TO RISE MODESTLY IN 1983

Red meat prices may rise only modestly until the second half of next year. Sometime late next spring, the economy is expected to begin improving enough to allow unemployment to stabilize, and the length of work week for those employed to rise. These developments should give consumers tangible evidence of a sustainable recovery. The July 1, 1983 tax cut should give consumers additional reason to loosen their purse strings.

Hog and Pork Prices

Hog Prices Continue to Rise

During the first 9 months of 1982, barrow and gilt prices at the 7 major markets averaged \$55.54, up 23 percent from a year earlier. Hog prices averaged \$57 in October, and about \$53 per cwt in November. However, prices are expected to rise sharply as slaughter declines during December. Prices for the fourth quarter are expected to average \$56 to \$58 per cwt, up about 36 percent from a year earlier. Supplies of pork as well as of other meats are expected to tighten in the coming weeks. Frozen pork supplies as of September 30 were 13 percent below last year's relatively low 207 million pounds.

Hog prices in 1983 may average about \$59 per cwt, compared with \$56 in 1982. Prices in the first and second quarters are expected to average \$58 to \$62 per cwt. If the projected production of 6.65 billion pounds is realized, this would be the lowest first-half output since 1978 and the smallest per capita consumption since 1976. Low production will strengthen prices. However, continued high unemployment and short work weeks will reduce consumer purchasing power and limit price gains.

Hog prices in the second half of 1983 are expected to average in the high \$50's per cwt. Although pork production is expected to rise, the year and a half of sharply declining production will make pork supplies relatively tight. The economy is expected to start recovering in the second quarter, and another tax cut is scheduled for July. The two factors should increase consumer purchasing power, and thus strengthen hog prices.

Pork Price Gains to Moderate

In 1982, farm-to-retail price spreads may average in the mid 80-cent range, up about 5 percent from a year earlier. Most of the increase is due to higher wholesale-retail spreads. Farm-wholesale spreads may average about the same as last year because packers bid up hog prices earlier in the year to keep their plants running near full capacity. The major packers agreed to keep plants open in exchange for wage concessions. In 1983, the farm-retail price spread may rise modestly.

This year, retail pork prices rose about 15 percent from last year's \$1.52 per pound. Prices rose through the first 9 months, reaching \$1.91 a pound in October. Although pork supplies continue to be tight, retail prices are expected to moderate slightly in the fourth quarter from the October high.

Next year, retail pork prices may average 5 to 8 percent above 1982's \$1.75 per pound. Prices are expected to show little movement through the year.

Cattle and Beef Prices

Cattle Prices To Rise Through Spring

Prices of Choice fed steers at Omaha may average \$67 to \$68 in 1983, compared to about \$65 in 1982. Fed steer prices are expected to rise modestly through winter. A sluggish economy and continued uncertainty about job security will hold steer prices in the mid-\$60 range from late fall through winter, with prices rising modestly from present levels through the period. The present large farm-to-retail spread should allow for these modest live animal price increases through early spring, with little rise in retail prices. Seasonally declining meat supplies next spring, plus an expected improving economy and increased future job security, will likely allow prices to rise into the upper \$60's, with prices above \$70 quite possible. The extent of herd rebuilding and economic growth in the second half will play an important role in determining prices then. Prices are expected to peak by midsummer, with some modest declines expected next fall. A slow rate of economic growth, continued high unemployment, and a pent-up demand for replacement of durable goods will hold down beef price gains. Consequently, second-half fed steer prices may average \$65 to \$70.

Feeder Cattle Prices To Increase

Yearling feeder cattle prices at Kansas City will remain near fed cattle prices until next spring, as cattle feeders remain cautious buyers. Prices may average above \$70 next spring, particularly if grazing conditions are good and herd rebuilding becomes more evident. Feeder cattle prices may average in the upper \$60 range in second-half 1983. Prospects for larger pork and broiler production from next fall through 1984 are also likely to hold down bids. For the year, prices for yearling steers at Kansas City may average \$2 to \$4 per cwt above this year's \$65 average.

Feeder calf prices may be more volatile, with prices, particularly next spring, rising \$5 to \$10 per cwt above the yearling prices. Feeder calf prices this fall have averaged well below a year ago. Year-to-year discounts on heifer prices have been even larger. Poor wheat grazing prospects this fall have continued to hold down prices.

Utility cow prices may average in the low \$40's per cwt in 1983, only a couple of dollars above 1982. Cow slaughter is expected to decline, but continued relatively low feeder calf prices, as cattle feeders remain cautious, will hold down herd rebuilding and cow prices.

Retail Beef Prices To Moderate

Prices of Choice beef at retail will average about \$2.45 in 1982. However, despite expectations for higher fed cattle prices beginning later this fall and continuing through next spring, retail prices may rise only modestly. The farm-to-retail spread was record large in September, and remained large in October. However, the spread was narrow in the first half of 1982, and it is likely to narrow again through spring as fed cattle prices rise. Retail beef prices may average near \$2.50 in first-half 1983, with much of the year's increase occurring in late spring through midsummer. Second-half prices may average about \$2.57.

Lamb Prices

Choice slaughter lamb prices at San Angelo averaged \$58.66 per cwt in the first 3 quarters of 1982, down 3 percent from a year earlier. In the fourth quarter, prices are expected to average \$50 to \$53, about the same as last year. In 1983, prices may average \$55 to \$60--about the same as last year.

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Poultry and egg producers can look forward to lower feed costs in 1983, with poultry and egg prices averaging near the levels of this year. Prices are expected to remain weak in 1983, in spite of continued reduced supplies of red meats, as consumer budgets continue tight. An improvement in the general economy which significantly lowers unemployment could sharply strengthen poultry prices, given the expected reduced supplies of red meats.

Factors Affecting the Poultry Industries

Feed Costs

Feed costs from now through July 1983 should be lower than a year earlier. The corn crop for the 1982/83 marketing year is forecast at 8.3 billion bushels, up from 8.2 billion last year, adding to already large grain stocks. As a result, prices have declined. The farm price of corn during the 1982/83 marketing year is forecast to average \$2.15 to \$2.35 per bushel, down from \$2.45 per bushel in 1981/82. The soybean crop is also forecast at a record 2.3 billion bushels, up 14 percent from 1981. The price of 44 percent protein soybean meal at Decatur for the marketing year beginning October 1, 1982 is forecast to average \$150 to \$175 per ton, down from \$182.50 per ton estimated for 1981/82.

The Economy

Preliminary data indicate the Gross National Product (GNP) was unchanged in the third quarter, suggesting a recovery has not started. Consumers remained cautious about the future and consequently spending was sluggish, especially for durable goods (housing and automobiles). Current forecasts point towards sluggish growth in the economy through much of 1983.

The slow recovery in the economy is expected to keep unemployment at historically high levels through 1983. Those people that are fully employed are probably eating as much poultry and eggs as they want. The unemployed and under-employed are having to make fewer dollars cover their expenses. While poultry and eggs are usually a good buy, these people can only afford these items when sale-priced, which does not promote price strength. As a result, poultry and egg prices have been weaker than would have been expected given the overall level of meat production during 1982. The slow recovery in the economy, with implied high unemployment, will likely limit price gains for poultry and eggs.

Broilers

Broiler prices have remained weak in 1982, especially when compared to the sharp increases for beef and pork. Normally, when beef and pork prices rise sharply, consumers shift from the higher-priced red meats to broilers, thereby strengthening broiler prices. While some consumers may have shifted from red meats to broilers this year, the supply of broilers for domestic consumption also increased due to lower exports of broilers. This increase in domestic supplies, coupled with a sluggish consumer demand, held wholesale broiler prices below their 1981 average.

Producers were able to reduce their feed costs during 1982 because the large crops harvested in 1981 resulted in lower prices of corn and soybean meal. During the first 3 quarters of 1982, feed costs per pound of liveweight broiler produced dropped 17 percent.

Production of broiler meat during the first 9 months of 1982 totaled 9,127 million pounds, up about 1 percent from the same period in 1981. Numbers were about the same, so all of the increase was due to heavier weights, 4.02 pounds per bird, up 1 percent. Weekly reports of chick placements suggest that October-December broiler output will be down about 6 percent from the previous quarter and up 2 percent from a year earlier.

The weak prices have forced producers to cut costs; one method has been to reduce pullet placement in the hatchery supply flock. The cumulative placements of pullets 7 to 14 months earlier gives a rough measure of the hatchery supply flock, and some indication of the number of hatching eggs available. Cumulative pullet placements are 10 percent below a year earlier in the fourth quarter. However, weekly reports of broiler eggs set continue to be 1 to 2 percent above last year. One source of additional eggs for domestic use is the weak foreign demand for hatching eggs. During January-September, U.S. exports of hatching eggs have been down 16 percent from last year. If hatching egg exports continue weak, broiler eggs not exported may be used for domestic production. Cumulative pullet placements will continue to trail last year through next May by 7 to 8 percent. Broiler producers can increase hatching egg supplies by delaying the sale of old hens and by setting smaller eggs than normally used. For these reasons, cumulative pullet placements provide a rather inconclusive measure of available broiler hatching eggs.

1983 Production

In spite of reduced cumulative pullet placements, broiler producers are expected to increase 1983 output slightly. The large corn and soybean crops just harvested will hold down feed costs to producers. The expected declines in red meat supplies through the first half of 1983 should encourage broiler producers to expand. However, the sluggish economy will likely continue to limit sales and moderate the expansion.

Data on cumulative pullet replacements indicate hatching eggs could now be in short supply. Delayed sales of old hens could add some additional eggs to the hatching egg supply. However, the overall reduction in the hatching egg supply should be enough to slow expansion in the first half of 1983.

Unless broiler prices improve more than currently expected during the first half of 1983, pullet placements are not expected to increase enough to result in any further expansion in broiler production during the last half of the year. On balance, a 1 to 3 percent increase in broiler production for 1983 seems likely.

Broiler producers have invested time and money developing markets for their products, and do not want to lose the market share they have developed. Moreover, most of them are interested in increasing their market share. Thus, if some producers believe others are thinking of reducing output, they may expand, which will increase their share of the market.

1983 Prices

A slight increase in production and a weak recovery in the economy likely will hold prices near 1982 levels. Price rises are expected to be limited by consumers' reluctance to pay more when their incomes are growing very little.

In years past, prices have been strengthened by foreign demand. However, thus far in 1982, the strong dollar and declining foreign currency reserves by importing countries have reduced broiler exports by 30 percent from last year. A slight increase is expected in exports during 1983, but not enough to strengthen domestic prices.

Turkey

Turkey producers realized unfavorable returns from mid-1981 through the second quarter of 1982. The economy was expected to improve in late 1981, and with declines in pork production, producers planned on a strengthening demand for turkey. Therefore, they built large stocks of frozen turkey and increased poults hatched. The economy weakened, and turkey prices declined sharply as processors tried to clear their stocks. It has taken 9 months to reduce turkey supplies enough to begin strengthening prices. Production costs this year have been below last year and, with current crop prospects, total costs are expected to remain near current levels in 1983.

Production

Turkey production in the first half of 1982 was 1 percent below the same period in 1981. However, per capita consumption during January-June was 7 percent more than 1981, as stocks were reduced. Negative returns

in the first half reduced poult hatch; thus, production in the remainder of the year is expected to be 2 percent less than in 1981. Positive returns encouraged increased production in July and August. To maintain consumption slightly below last year's level, stocks will likely be drawn down, possibly near beginning 1981 levels.

If profits continue favorable and stocks relatively low, turkey producers will likely expand production in 1983. However, producers have stated intentions to hold 9 percent fewer hens on December 1, 1982 than a year ago. Thus, the expansion may be limited by availability of hatching eggs. Producers may expand first half 1983 production by about 6 percent above 1982. In the second half of 1983, turkey output may increase about 2 percent above this year's reduced level.

Prices

The price of 8-16 pound young hen turkeys in New York averaged 59 cents per pound in the second quarter, down from 64 cents in 1981, reflecting the continued impact of the stocks of frozen turkey. Prices have strengthened as stocks declined. The price of young hens in the third quarter averaged 65 cents per pound, up from 63 cents last year. Prices this fall will be strengthened by a more moderate level of frozen turkey stocks, and reduced supplies of competing meats. Prices for young hen turkeys may average 67-69 cents in the fourth quarter, sharply above last year's 55 cents. Without large stocks of frozen turkey and reduced supplies of red meats, prices are expected to be stronger in 1983--possibly averaging 62-68 cents per pound, up from 61-63 cents this year.

Eggs

Preliminary cost estimates suggest that egg producers had favorable returns in the first quarter of 1982, helped by lower feed prices. In the second and third quarters, lower egg prices caused returns to slip below costs. Egg producers had unfavorable returns during most of 1980 and 1981.

As a result of these losses, producers, have been reducing the number of replacement pullets added to the flocks since the beginning of 1980. During 1981, the number of egg-type chicks hatched was down 6 percent from 1980, after being down 7 percent in 1980 from 1979. Through September, egg-type chick hatch was 1 percent below January-August 1981 and 7 percent below 1980.

To offset the decline in replacement pullets, egg producers have been keeping their hens in production longer, in order to maintain production. One indication of this is the percentage of the flock that has been force molted. Force molting gives hens a rest from laying, so that when they start laying again, they are more productive than before their rest. During 1982, the percentage of the flock that had been force molted was lowest in March, at 18.6 percent. During January, February, and March, 1982; approximately 19 percent of the flock had been force

molted. The lower egg prices in mid-year encouraged additional light-type slaughter but the number of hens that had been force molted continued to increase and reached 20.5 percent on September 1. The increase in the percentage of the laying flock force molted suggest the average age of the flock is older, and producers are keeping their hens longer.

Egg Production

Egg production in June-August was 1,422 million dozen, down 1 percent from last year. With fewer replacement pullets and reduced slaughter of laying hens, egg production in September-November may be 1 percent below the 1,450 million dozen produced in 1981.

Producers are expected to remain cautious about expanding in 1983. They will likely continue to keep their old hens in the flocks as long as they are producing and returns are favorable. Egg production during 1983 may be about the same as in 1982, as low feed costs help moderate costs of production. But, production in the first half may be down slightly because of low numbers of replacement pullets. If the economy begins to show signs of recovery in the first half of 1983 and interest rates decline to encourage additional pullet purchases, egg producers are expected to increase output in the second half of 1983.

Egg Prices

The price of Grade A large cartoned eggs in New York in June-August was 64 cents per dozen. A sharp drop in foreign demand has weakened prices even with a cut in domestic production. Egg prices usually strengthen in September-November, when more eggs are used in holiday baking. Egg prices may average 69 cents in September-November, 1982--down from 77 cents last year. If producers keep output near last year's level, egg prices in the 1983 marketing year may average 67-73 cents, near the 70.8 cents in 1982.

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The current world economic recession is having an adverse effect on trade in general. For beef, however, there are two main reasons why the international beef market is particularly sensitive to global economic recessions. First, lower consumer demand for beef puts downward pressure on prices, which in turn causes producers to respond by increasing marketings of cattle as herd building programs are reassessed. This adds to available beef supplies, which further aggravates downward price movements. Second, the complex institutional arrangements in the international beef market are such that individual trading countries react to declining market prospects in a manner which adds to market instability. Importing countries react by restricting trade and, in some cases, by supporting domestic market prices so that production is maintained while consumption is less than it would be in the absence of market intervention. Some exporting countries react by subsidising exports or otherwise assisting the export sector so that other exporters face increased competition.

These responses and reactions were clearly demonstrated in the mid-1970s when world economic recession was accompanied by increased production, a closure of the EEC and Japanese markets and a drastic fall in international beef prices. In the current economic recession, there are elements of these general responses apparent, but the effects are far less severe. This is partly because of the adjustments to supplies which occurred largely in response to the recession in the beef market in the mid-1970s. On the other hand, there are additional elements such as the impact of white meats on beef demand.

These complex interactions between economic activity, changing consumer tastes, producer supply responses and market intervention by governments need to be carefully weighed up in assessing future prospects for world beef trade. In looking to the future, I shall first concentrate on likely short-term developments and then venture into an assessment of the longer term. In doing so, I shall attempt to highlight some important emerging trends in the international beef market. The thesis I put forward for discussion is that world production in beef may be heading toward greater concentration in importing countries and that, despite efforts within GATT to free up trade in agricultural products, it is unlikely there will be any significant relaxation of existing restraints on world trade in beef.

Outlook for 1983

A firm and sustained economic recovery in major world economies, particularly the USA, now appears to be a prerequisite for a significant

upturn in the world beef market. There are signs that the U.S. economy is starting to recover. Interest rates, though still high by historical standards, have fallen significantly in the past twelve months and inflation rates, now around 4-5 per cent, give some scope for a more relaxed monetary policy. The rise in the index of leading indicators is also encouraging. However, my understanding is that business confidence is still weak and unemployment at around 10 per cent is the highest since the depression years. My concern is that any improvement in the U.S. economy, at least in the first half of 1983, may be too weak to increase significantly consumer demand for items like beef. Forecasts for the U.S. economy next year vary considerably but on balance it seems to me that economic growth rates on an annual basis of only 1-2 per cent can be expected in the first half of next year, with some further modest strengthening in the second half. In general, some improvement in economic activity is also expected in other major beef trading nations.

What all this means is that, because beef demand is responsive to income changes, only modest improvement can be expected in demand for beef, which will have a small but, hopefully, significant positive impact on beef prices.

On the supply side, further increases in beef production in 1983 are expected in the major importing countries but production should decline substantially in Oceania. Little change is expected in beef output in South America, where production fell 6 per cent this year. With cattle numbers in Argentina being the lowest for many years, and prices remaining low, beef exports are unlikely to increase much in the short term. There may, however, be some further increases in beef exports from Brazil where the Government has recently taken measures to stimulate exports.

In the United States the latest Cattle on Feed Report indicates an upsurge in cattle moving into feed lots largely as a result of low grain prices. This must dampen expectations of significant price rises for fed beef in the first half of 1983 even though pork supplies are likely to continue at well below year-earlier levels. Pork and poultry production should, however, show rising trends during the year in response to cheap feed grain. Overall, there may be little change in total meat supplies in 1983 but beef production may be up slightly. From an exporter's viewpoint, a positive factor is the expected reduction in non-fed steer and heifer and cow beef supplies. During much of 1982, cow slaughterings were 10 per cent above year-earlier levels as producers culled their herds in response to reduced profit levels. Prospects for imported manufacturing beef are closely related to U.S. cow beef supplies.

The import beef market in the USA has recently been substantially affected by the arrangements which were made with major supplying countries to limit beef imports. For the first three-quarters of this year, forecasts of total imports were well below the trigger level of 1300 million lb but drought conditions in Australia and an appreciating U.S. dollar led to an upsurge in beef imports late in the year. New Zealand and Canada also increased shipments to the USA. Under the agreement reached between Australia, New Zealand, Canada and the USA,

shipments for 1982 were limited to 677 million lb for Australia, 340 million lb for New Zealand and 121 million lb for Canada. This voluntary arrangement eliminated the need to bring in formal restraint arrangements or to invoke the quota. Any shortfall from Central American countries should also be allocated to these major suppliers. Imported beef prices rose sharply in response to the restrictions but, with continuing high shipments going into bond for release next year, the market has already anticipated lower prices in the early months of 1983. The release of bonded stocks, however, is likely to result in only a short-term aberration in the market.

We expect the trigger level for 1983 to be around the minimum import level of 1250 million lb and, at present, it seems that there could be a need to negotiate voluntary restraint levels for 1983. Because of the effects of the current drought, shipments from Australia are expected to be around 580 million lb in 1983, and New Zealand and the Central American countries are also expected to have lower supplies available for export. However, some allowance must be made for stocks now in bond, so that estimates of total imports available will be at least close to the 1983 trigger level.

Developments in the Canadian beef industry have closely paralleled those in the USA. At this stage, our assessment is that Canadian imports next year will be less than the minimum restraint level.

Japanese beef imports have declined over the past four years but, under agreements negotiated under GATT, imports for the current Japanese fiscal year will be 135 000 tonnes. The United States has become a significant supplier of high-quality beef to the Japanese market and substantially increased its share of imports this year, while Australia and New Zealand suffered a loss of market share. Future quotas will be determined by bureaucratic decisions which should, nevertheless, bear some relationship to economic circumstances.

The Republic of Korea (South Korea) and other South-East Asian markets have been steadily growing markets for beef, mainly from Australia. South Korea increased imports by 75 per cent this year to 62 000 tonnes but, largely because of expected increases in domestic production, imports may be down next year. Australia, to date, has been the only significant supplier of beef to South Korea. Elsewhere in South East Asia, demand for beef imports should remain firm in the short term.

Turning to Australia, cattle numbers have been declining for the past six years, from 33 million in 1976 to an estimated 22.4 million in March 1983. A succession of drought years has played a part in this decline but, more particularly, the returns to beef producers both in absolute terms and relative to alternative enterprises such as wheat and wool have been extremely unattractive to producers. In contrast, while grain and wool prices have also declined somewhat in real terms from the high levels of 1979, producers' confidence has been underpinned by the respective marketing arrangements for those commodities. The result of these differential returns to alternative enterprises has been a marked contraction of the herd, particularly in the southern parts of Australia.

The very high slaughterings and export levels in recent months can be directly attributed to producers' responses to the severe drought conditions.

Total production of beef and veal in 1983 is forecast at 1.44 million tonnes, 12 per cent below this year's production estimate but only slightly above production in 1981. Domestic consumption of beef is expected to fall in response to somewhat higher beef prices and probably a continuing weak Australian economy. Exports are expected to fall by an even greater proportion, to 490 000 tonnes shipped weight. Of this, around 265 000 tonnes (580 million lb), or around 54 per cent of total exports, are likely to be exported to the USA. This compares with exports of 325 000 tonnes expected in 1982.

Beef production in New Zealand for the year ending September 1983 is forecast to decline by 2 per cent to 460 000 tonnes. Payments to the beef sector under the Government's Supplementary Minimum Price Scheme have been substantial this year (8 per cent of the value of beef exports) and have reduced the incentives for producers to reduce cattle numbers which remained steady at the last June census.

Beef trade outside the foot and mouth disease free Pacific zone is dominated by the EEC which is now both a major importer and exporter. Beef production in the EEC-10 is expected to stabilise around the 1982 level of 6.8 million tonnes or to increase slightly, after having declined over the past two years. More importantly, beef exports in 1982 were about 100 000 tonnes less than in 1981 and exports should fall even further to around 450 000 tonnes in 1983, compared with 640 000 tonnes in 1980. Furthermore, imports are forecast to continue their upward trend so that the significance of the EEC as a net exporter should be less apparent next year. This may improve prospects for beef sales by Oceania to third markets like the Middle East.

In summary, my assessment for 1983 is that there is likely to be some improvement in international beef prices, largely as a result of reduced supplies of beef from main exporting countries but also because of an expected moderate improvement in major world economies. We expect prices for Australian beef exports to improve by around 5-10 per cent after expected exchange rate adjustments; but because of reduced supplies, average prices to producers may be up by around 10 per cent.

Emerging Trends

A number of significant changes are emerging in the international beef market which are of particular concern to exporting countries and which, I believe, will have a significant bearing on prospects for the longer term. I shall highlight just two aspects: increasing consumption and trade in poultry meat; and a trend toward more 'protectionism'.

Technological advances in the production of poultry meat over the past twenty years are well known. The result has been a very substantial increase in world poultry meat production and its availability at a much reduced price. In practically every major meat consuming country with the exception of Argentina, the share of poultry consumption in total meat consumption has increased substantially while, in general, the share of beef has declined. The lower quality end of the beef market has probably been most affected by increased competition from poultry. In the USA, for

example, it is estimated that sales of chicken meat through 'fast food' restaurants exceeded those of beef in 1980-81. This, together with the increased use of pork in processed meat products, may explain in part the weak demand for imported beef in the USA since 1980.

The growth in world trade in poultry meat has been no less remarkable, with trade expanding at an average annual rate of 11 per cent between 1970 and 1980. (World beef trade expanded by 3.4 per cent a year over the same period). World poultry meat exports expanded by a further 23 per cent in 1981. A major growth area for poultry meat has been the Middle East, where imports expanded by 550 000 tonnes in the decade to 1980, and accounted for 60 per cent of the total expansion in meat imports into that region. Poultry meat imports now account for half of total meat imports by the Middle East.

Clearly, the competition from poultry meat will not lessen and is likely to intensify. In times of economic recession, consumers are likely to turn to the cheaper meats such as poultry, while in buoyant periods, since poultry has a shorter production period, increased demand for meat may, to some extent, be more readily satisfied by a relative increase in poultry meat availability.

Turning to 'protectionism', the international market is more unstable and is subject to a greater proliferation of government intervention measures than most other agricultural commodities. All major importing countries now have mechanisms firmly in place to restrict beef imports by quotas or other means, while some countries, such as the EEC, Japan and South Korea, provide substantial price support to domestic producers in addition to restrictive trade barriers.

To a degree, the 'countercyclical' meat import legislation recently introduced by the USA and Canada, reduces the scope for ad hoc manipulation of import quotas but, nevertheless, under these schemes imports are used as instruments to help stabilise the internal beef markets. Consequently, the burden of adjustment is thrown back on exporters. At the same time, the effectiveness of the import policy in achieving greater stability in domestic beef prices has been shown to be minimal. Despite these aspects, it must be pointed out that, over the years, the USA has offered more stable minimum access, trouble free trading and generally higher prices than any other major market.

The complex import control and price support mechanisms utilised by the EEC, Japan and South Korea not only encourage domestic production and discourage consumption but also inflict considerable uncertainty and instability on exporters via the 'stop-start' nature of bureaucratically controlled import quotas. The introduction of the EEC's Sheepmeat Regime is a further example of creeping 'protectionism' and may have indirect effects on world beef trade. In the case of the EEC, the goals of increased self-sufficiency and of providing adequate income support to domestic producers have been so adequately fulfilled that, over the past three years, the EEC has been the second largest net exporter of beef in the world, whereas previously it was a significant net importer of beef. Of particular concern is the EEC's policy of subsidising exports out of

intervention stocks so that traditional exporters are virtually excluded from markets supplied by the EEC. All indications point to the EEC remaining a major net exporter of beef in the years ahead.

The substantial increase in volume of beef trade which occurred at relatively low prices in the late 1970s and the recent economic recession in part underlie current pressures for increased protectionism. Some reactions to the current situation (in beef and sheep meat trade) include the increased use of barter trading (e.g. Iran's arrangements with several countries, notably New Zealand), bilateral long-term agreements (e.g. Egypt with Uruguay and Argentina with the USSR), introduction of sole trading powers on the part of some exporters, at least for certain markets (Australia and New Zealand), and greater efforts to stimulate exports (e.g. Brazil).

The potential danger in all this is that a 'beggar thy neighbour' attitude could develop, which would be completely contradictory to recent efforts at a ministerial level within GATT to work toward greater trade liberalisation in agricultural products.

In spite of all these measures, beef trade between Oceania and North America has been relatively 'free' for most of the period since 1979. This has been largely because of the lower supplies available for export from Oceania, relatively low prices for imported beef, and exchange rate effects. It is only in recent months that drought has caused an upsurge in production and exports from Australia, which in turn has caused import restraints by the USA to become binding.

Let me now draw the threads together and make an assessment of broad directions for the longer term.

Longer-Term Prospects

Over the past fifty years, world trade in beef has gone through three distinct phases. The first, which lasted to the mid-1950s, is characterised by 'free' trade and the dominance of the United Kingdom as the major importer. Features of the second phase, up to 1973, include the strong growth of the North American and Japanese markets, buoyant consumer demand and rising prices, but increasing degrees of protectionism. During the third stage (the latter half of the 1970s), there was a further increase in the volume of world beef trade, with non-traditional importers or opportunistic buyers accounting for a sizeable proportion of total imports. For the most part, transactions occurred at depressed prices, and there were further increases in protectionism. The beef industry may well now be entering a fourth stage for much of the 1980s. This can be characterised by slower rates of growth in beef consumption, continuing high levels of protectionism and a somewhat greater degree of self-sufficiency in major importing countries, a relative shift in production patterns away from traditional exporters toward importing countries, and unstable but, overall, reduced volumes of trade across the Pacific and the Atlantic.

Obviously, a great deal of uncertainty is attached to any long-term assessment and much will depend, in particular, on future growth rates in

the world economy. However, given the significant economic problems now confronting governments, a reasonable assumption is that average rates of economic growth for the OECD area will be more in line with the relatively low rates of growth in the latter 1970s rather than the high growth rates of the 1960s. This, together with comments made earlier on the increased share of poultry meat in total meat consumption, suggests that, on average, rates of growth in beef demand could be relatively modest over the 1980s although there will continue to be significant year-to-year changes in line with variations in consumers' incomes.

On the supply side, unless there is substantial liberalisation of trade barriers (which seems unlikely) or a greater than anticipated rate of growth in major world economies, average production rates in importing countries are likely to be greater than in traditional exporting countries. In Australia, cattle numbers are forecast by the BAE to decline over the next year or two and to recover by 1987 to only about the herd size in March this year (24.5 million). Production and exports by 1987 are forecast at around 1.35 million tonnes and 610 000 tonnes, respectively, significantly lower than in recent years. Little more than modest increases, at the most, in beef production in New Zealand and Argentina can be expected, judging from recent forecasts supplied by these countries to GATT and OECD. In contrast, further significant growth in production from current levels has been projected for the USA, Japan and the EEC. In the short term, output should be encouraged by relatively low feed costs in these importing countries. For exporting countries, the predictability associated with minimum access levels in the USA and Canada will be extremely important, while the gains made under the MTN with respect to Japan will need to be fostered further.

There are, of course, a large number of alternative scenarios to these general broad trends. In the USA, for example, it could be argued that the trend toward reduced protection to the dairy industry will result in a decline in dairy cow numbers and, in the longer term, reduced beef production from the dairy herd. Implications for the short-to-medium term, however, would be increased cow beef production, which would be detrimental to Australian and New Zealand prospects for manufacturing beef sales. Alternatively, if there were to be a strong economic recovery with economic growth rates remaining at high levels, and if there were a series of crop failures in the Northern Hemisphere, international beef prices would rise sharply and this would substantially enhance production in exporting countries and growth in world trade. At this stage, however, this scenario would have a much lower probability of occurring.

Concluding Comments

In this paper, I have outlined briefly my thoughts on the outlook for world beef trade in the short and long terms, and discussed some emerging trends. In the short term, world trade in beef is likely to be characterised by reduced volumes and some improvement in trade prices. Longer term developments will clearly depend on the extent and timing of world economic recovery but, at this stage, it appears that the beef industry may well be entering a new phase characterised by lower volumes of trade and a slight shift in world production patterns away from traditional exporting countries. Guaranteed access to traditional markets will be of vital importance to the main exporting countries.



Session 18

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SUMMARY DISCUSSION OUTLINE
FOR
USDA ANNUAL OUTLOOK CONFERENCE

ON

**U.S. ECONOMY, SUPPLY, DEMAND AND PRICE OUTLOOK
FOR CATTLE, HOGS AND POULTRY**

by

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MEMBER

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Meat Supply Considerations

1. Total meat production was down 2% in 1982, compared to 1981 levels.
2. Total meat production will be up 1% and 3%, respectively, for 1983 and 1984, compared to previous year levels. However, on a per capita basis, total meat supplies in 1983 will be equal to or less than they were in 1982.
3. Beef cow and other cattle liquidation will continue during 1983 and 1984.
4. The total cattle inventory on January 1, 1983 will be down at least 1% compared to January 1 of 1982.
5. Total meat supplies during the first three calendar quarters of 1983 will be basically unchanged from the first three quarters of 1982.
6. Total beef production will be about 5.7 and 5.6 billion pounds, respectively, for the first and second quarters of 1983, compared to the fourth quarter of 1982 of about 6.0 billion pounds.
7. Pork supplies in 1983 will be down significantly, compared to 1982 levels, particularly during the first nine months of the year. We believe hog producers have not yet, but will during 1983, **start holding back gilts and start building hog inventories in 1983. Pork supplies in 1983 will be tight.**
8. Total poultry production in 1983 will be up about 2%, compared to 1982.

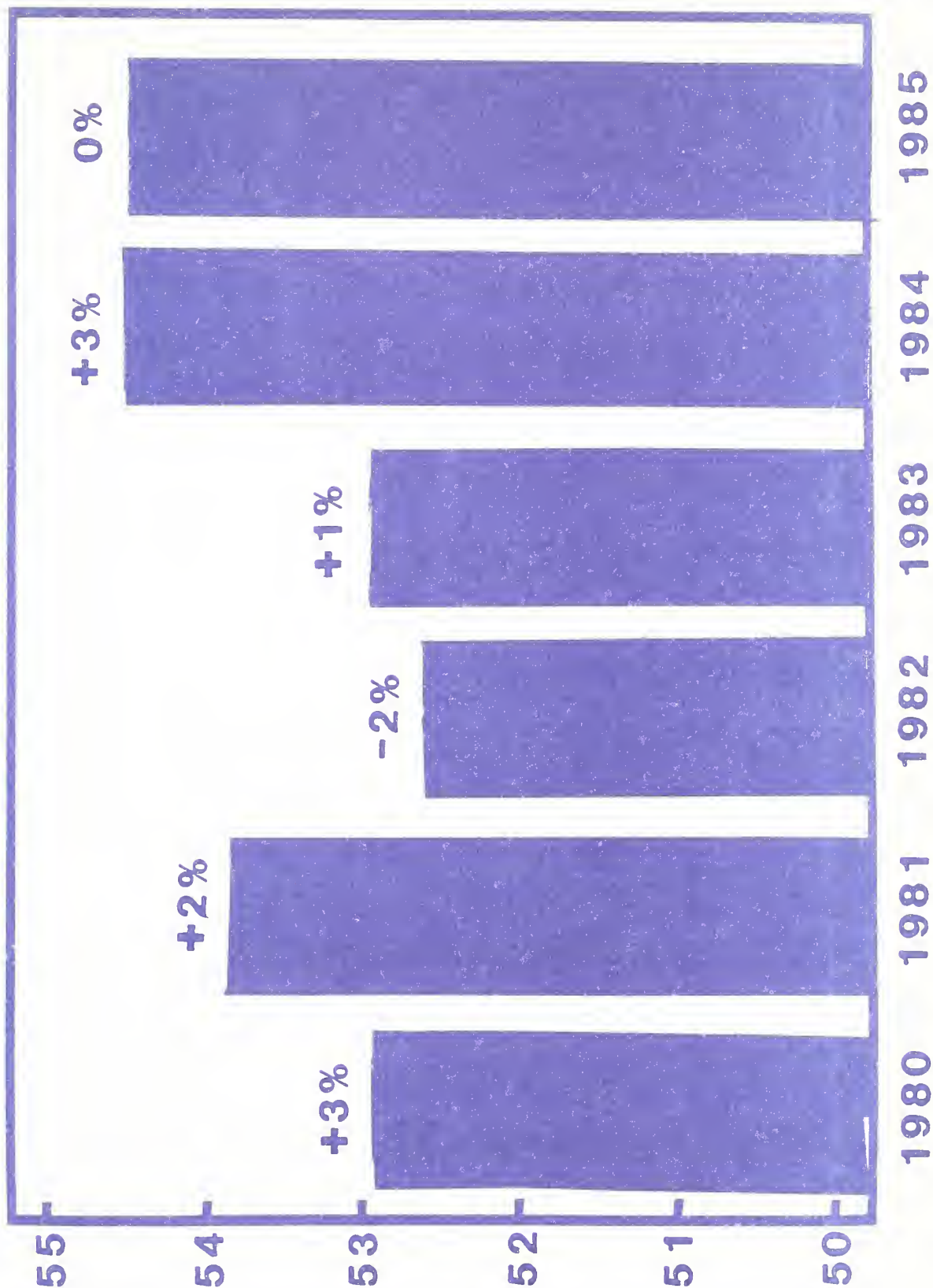
ECONOMIC AND CONSUMER MEAT DEMAND CONSIDERATIONS

1. We continue to expect real GNP growth in 1983 to increase 1% to 3%. Economic recovery will be very slow and will test the patience of many people over the next 2-4 years. However, the U.S. economy will show positive real growth and recovery in 1983 and 1984.
2. World trade will be disappointing during 1983 and 1984. The U.S. dollar in relationship to other currencies will remain very strong for at least 1983 and 1984. Export demand for U.S. produced grains, meat, meat by-products and foodstuffs will generally be relatively poor during 1983 and 1984.
3. The rate of inflation for 1983 in the U.S., as measured by the CPI, will be 5% or less.
4. Real interest rates will remain at relatively high levels for 1983, but the N.Y. prime interest rate will average lower in 1983, compared to 1982. Specifically, we continue to expect the prime rate to range between 9% and 12% in 1983, compared to a 14.6% N.Y. prime rate average for 1982.
5. The level of unemployment will remain relatively high during 1983 and 1984. Many businesses are taking long overdue steps to improve productivity and cost efficiency. These steps will help improve longer-term profit potential and will be a key factor in helping cause the stock market to go to substantially higher levels over the next two years. A part of this process is weeding out dead wood. The overall farm economy in 1983 will remain very disappointing.
6. The effective consumer demand for beef and pork has declined and shifted to the downside over the past several years. Consumer demand for poultry has remained relatively stable. We expect the demand for beef to shift further to the downside over the next ten years. Primary causes of the decline in consumer demand for beef over the past several years include:
 - (a) The recessionary economy and the consumer spending less income on red meat, and particularly the higher-priced cuts of beef.
 - (b) The abundance of relatively cheap competing meats and other sources of proteins is a major factor.

CATTLE AND HOG PRICE OUTLOOK

1. Fed and feeder cattle prices will strengthen significantly between November of 1982 and July of 1983 (see the price chart for fed cattle on the accompanying pages). The primary basis for this price strength will be reduced total beef supplies in the first and second quarters of 1983, compared to the fourth quarter of 1982.
2. The hog market will strengthen into February and March of 1983, decline seasonally into April, and then strengthen again into the spring and summer months of 1983 (see the price chart for hogs on the accompanying pages). The primary reason for this price trend is that hog producers will **start** to hold back some gilts and **start** to rebuild hog inventories during 1983.

ANNUAL COMMERCIAL TOTAL MEAT PRODUCTION AND PERCENT CHANGE FROM PREVIOUS YEAR



1982 QUARTERLY COMMERCIAL MEAT PRODUCTION
(billion pounds)

	Qtr I	Qtr II	Qtr III	Qtr IV	Year
Beef	5.5	5.4	5.7	6.0	22.5
% Change	-2.0	-1.0	+3.0	+5.0	+1.0
Pork	3.7	3.6	3.2	3.5	14.0
% Change	-9.0	-9.0	-10.0	-15.0	-11.0
Total Red Meat	9.3	9.1	9.2	9.7	37.3
% Change	-5.0	-4.0	-2.0	-4.0	-4.0
Poultry	3.5	3.8	4.1	3.9	15.3
% Change	+1.0	-1.0	+1.0	+2.0	+1.0
Total Meat	12.8	12.9	13.2	13.6	52.6
% Change	-3.0	-3.0	-1.0	-2.0	-2.0

1983 QUARTERLY COMMERCIAL MEAT PRODUCTION
(billion pounds)

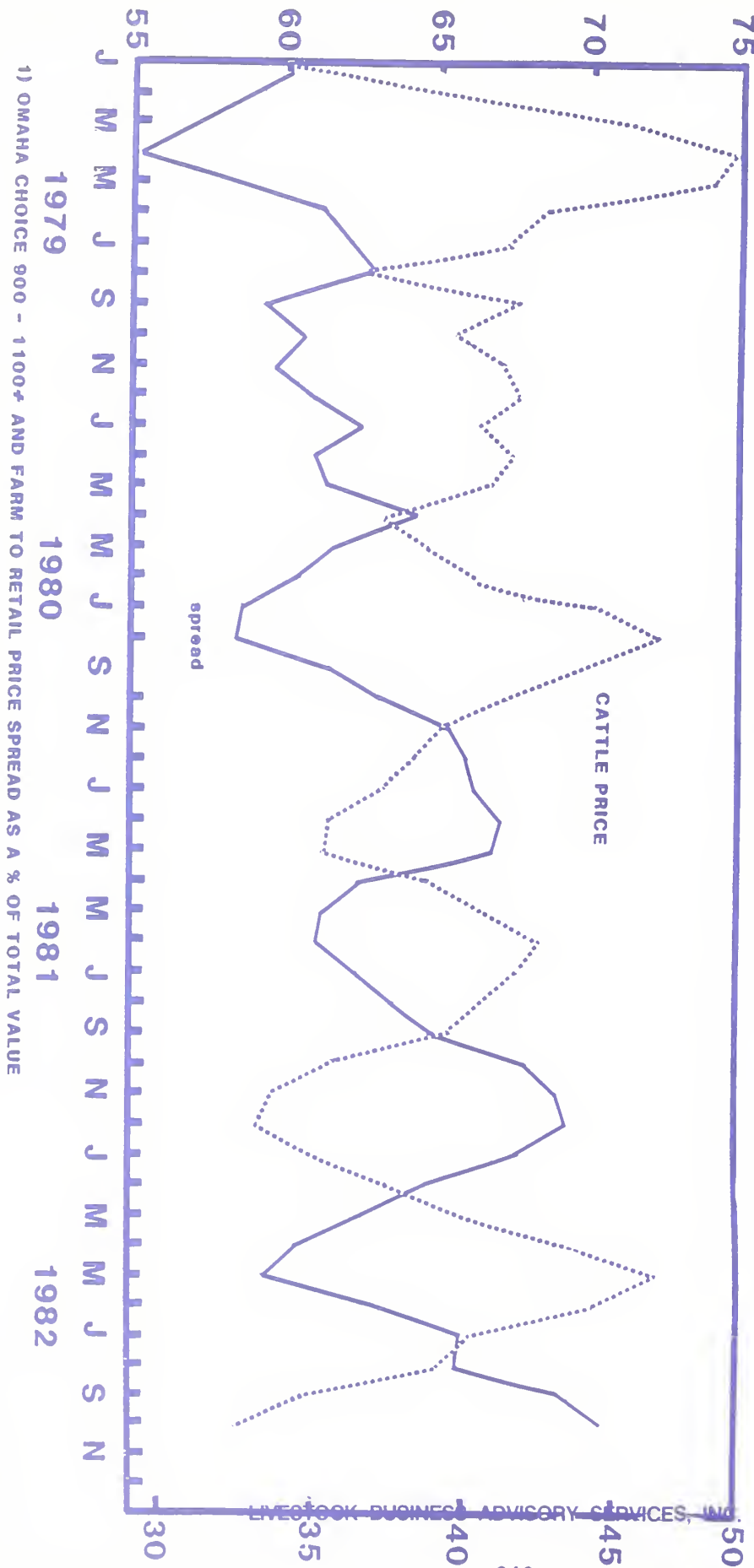
	Qtr I	Qtr II	Qtr III	Qtr IV	Year
Beef	5.7	5.6	5.8	5.9	22.9
% Change	+5.0	+4.0	+1.0	-2.0	+2.0
Pork	3.3	3.3	3.2	3.9	13.7
% Change	-11.0	-7.0	-2.0	+11.0	-2.0
Total Red Meat	9.2	9.0	9.1	10.0	37.4
% Change	-1.0	-1.0	0	+3.0	0
Poultry	3.6	3.9	4.1	3.9	15.5
% Change	+2.0	+2.0	+1.0	0	+2.0
Total Meat	12.8	12.9	13.2	13.9	52.9
% Change	0	0	0	+2.0	+1.0

Cattle Price

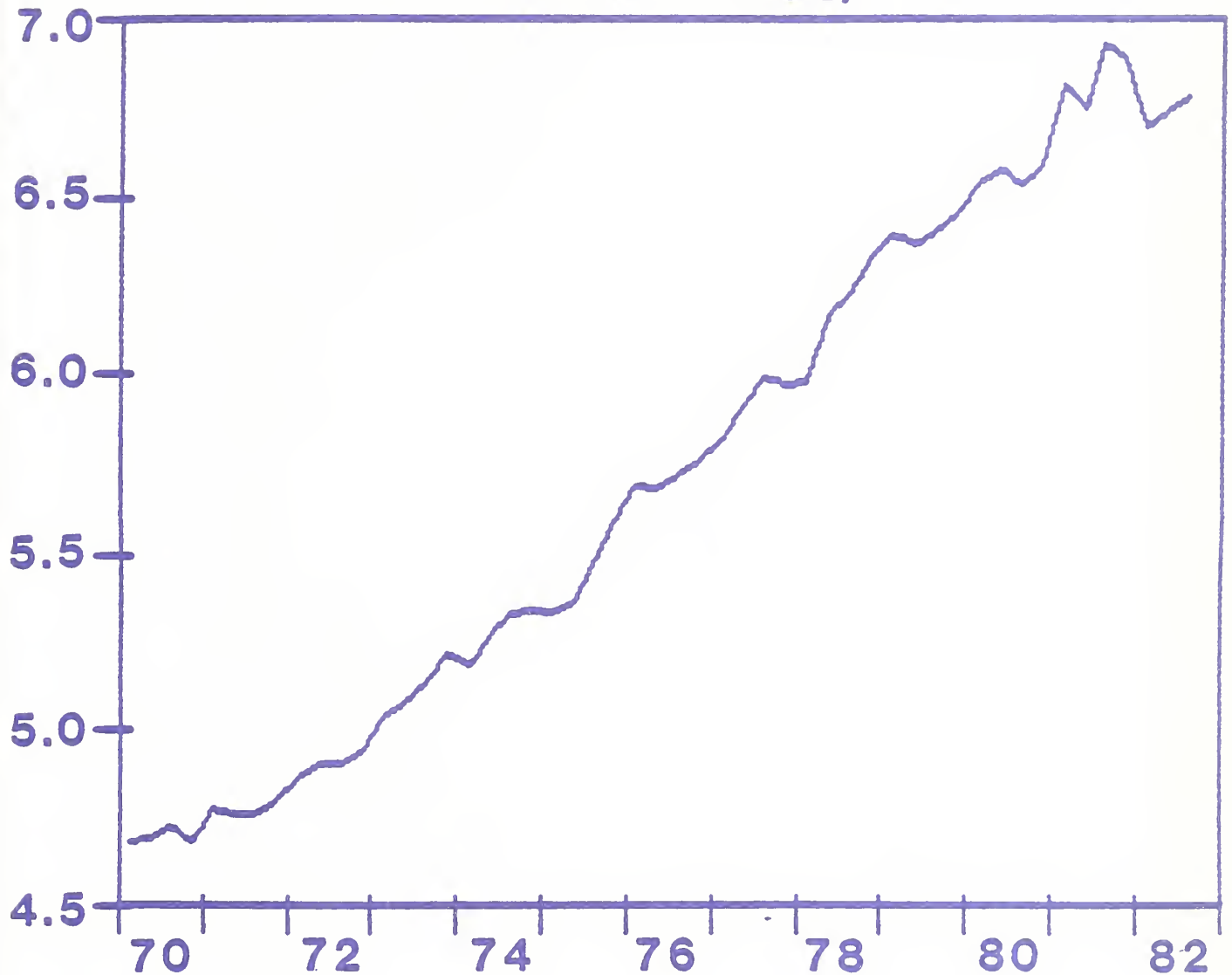
CATTLE PRICES AND PRICE SPREAD

(\$/CWT and %)

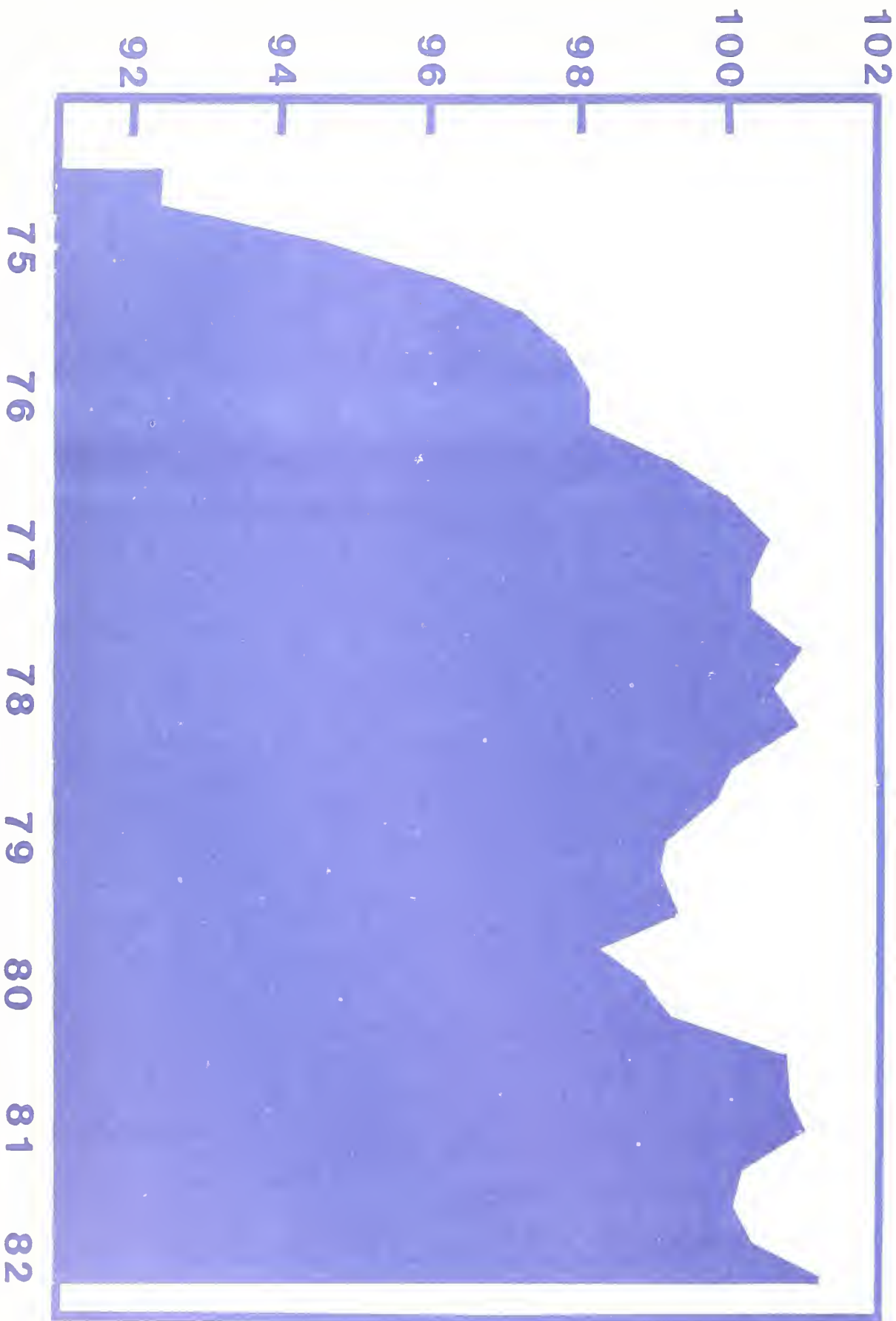
Spread



QUARTERLY MONEY VELOCITY (1970 - 1982)

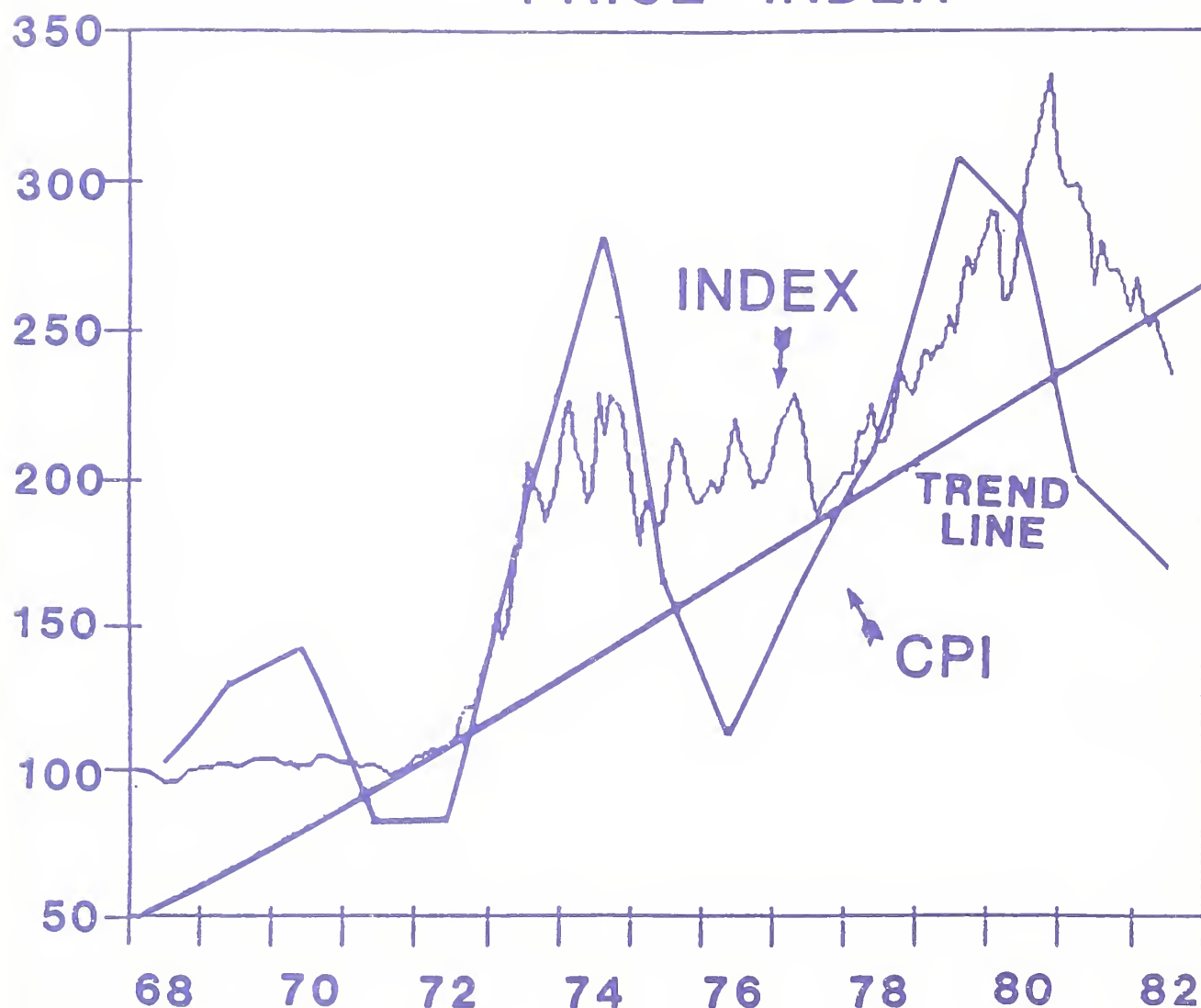


INDEX: OUTPUT PER MAN HOUR ALL PERSONS, PRIVATE BUSINESS SECTOR 1977 = 100

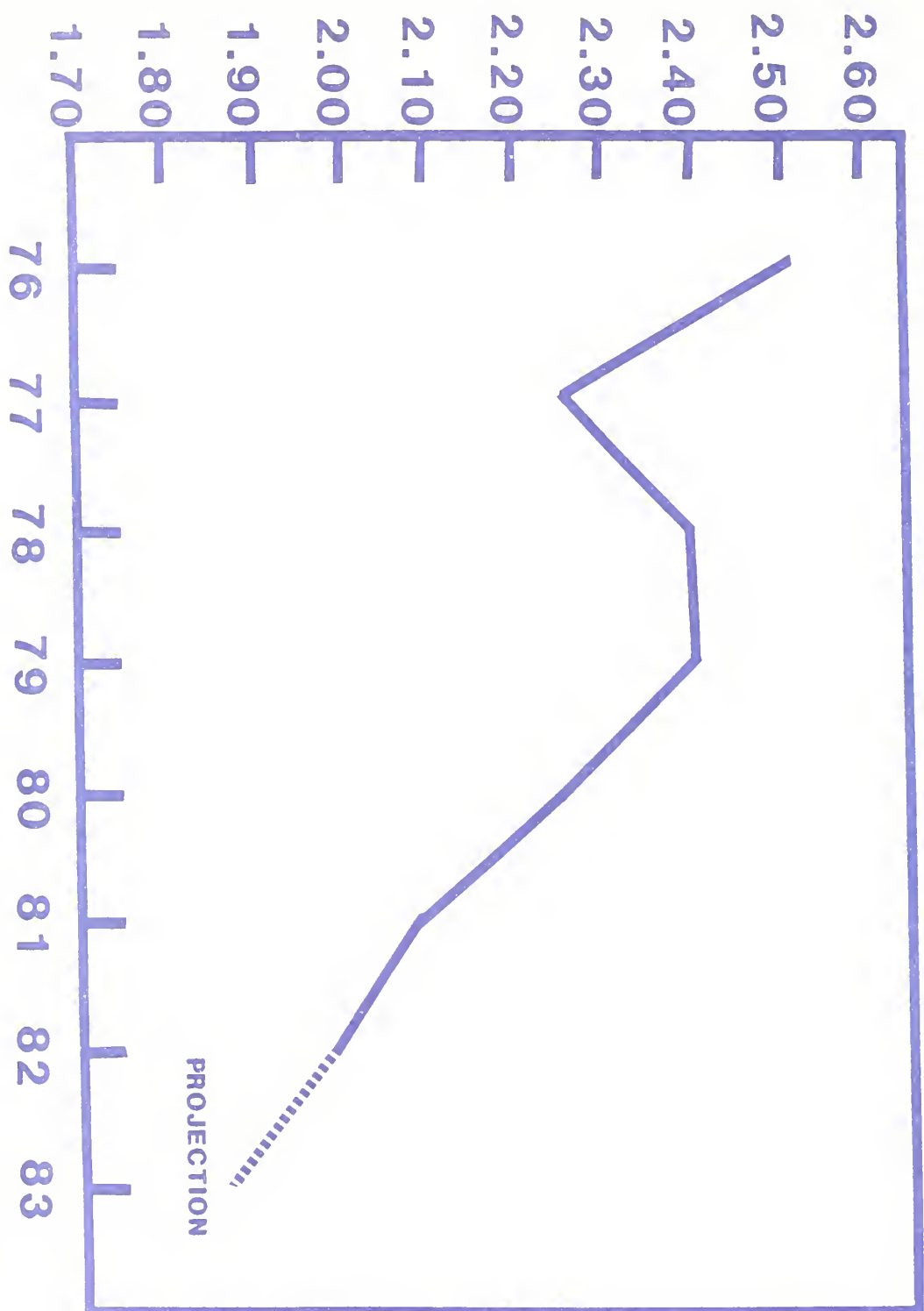


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C. P. I. VS. COMMODITY FUTURES PRICE INDEX

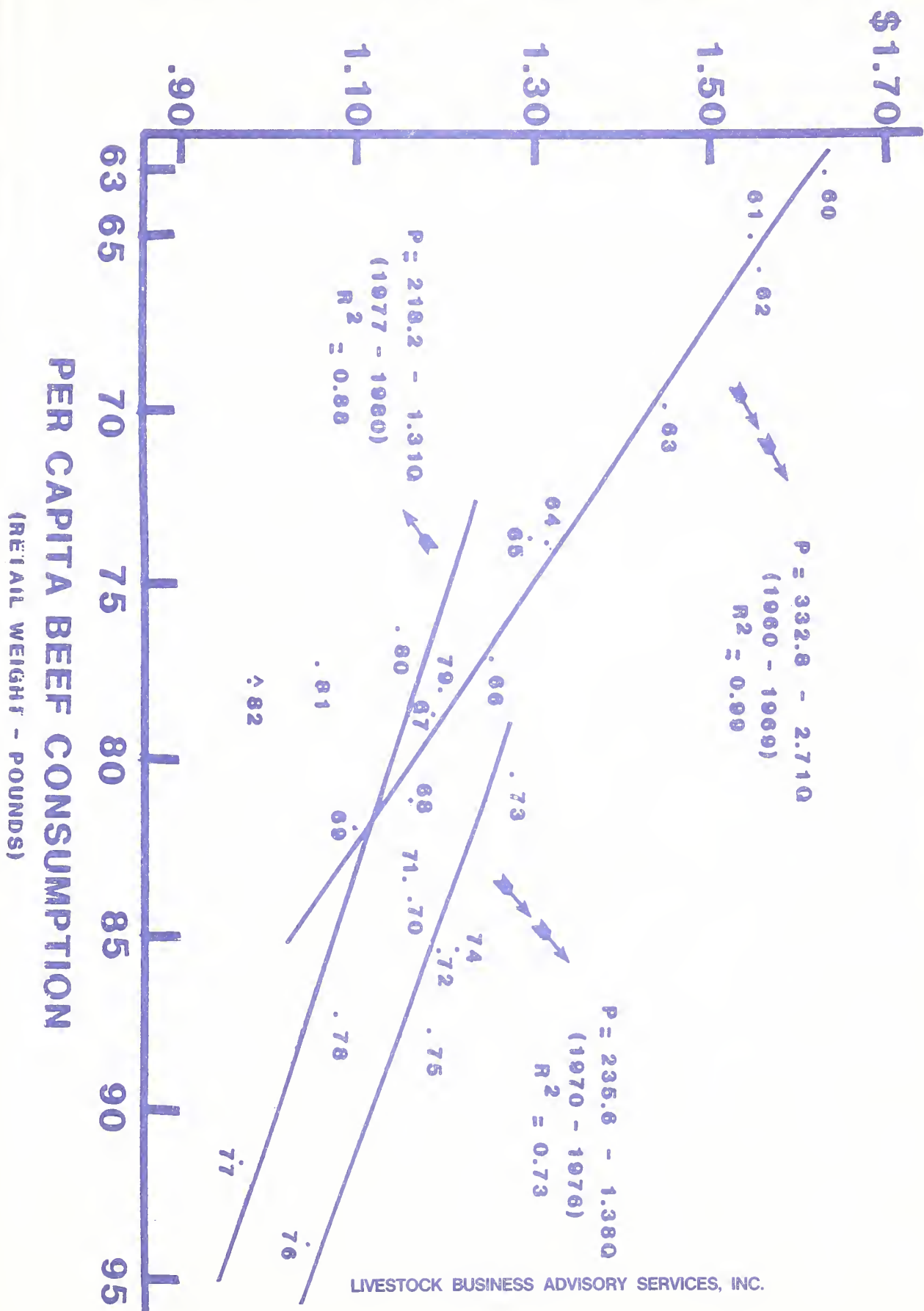


PERCENT OF DPI SPENT ON BEEF



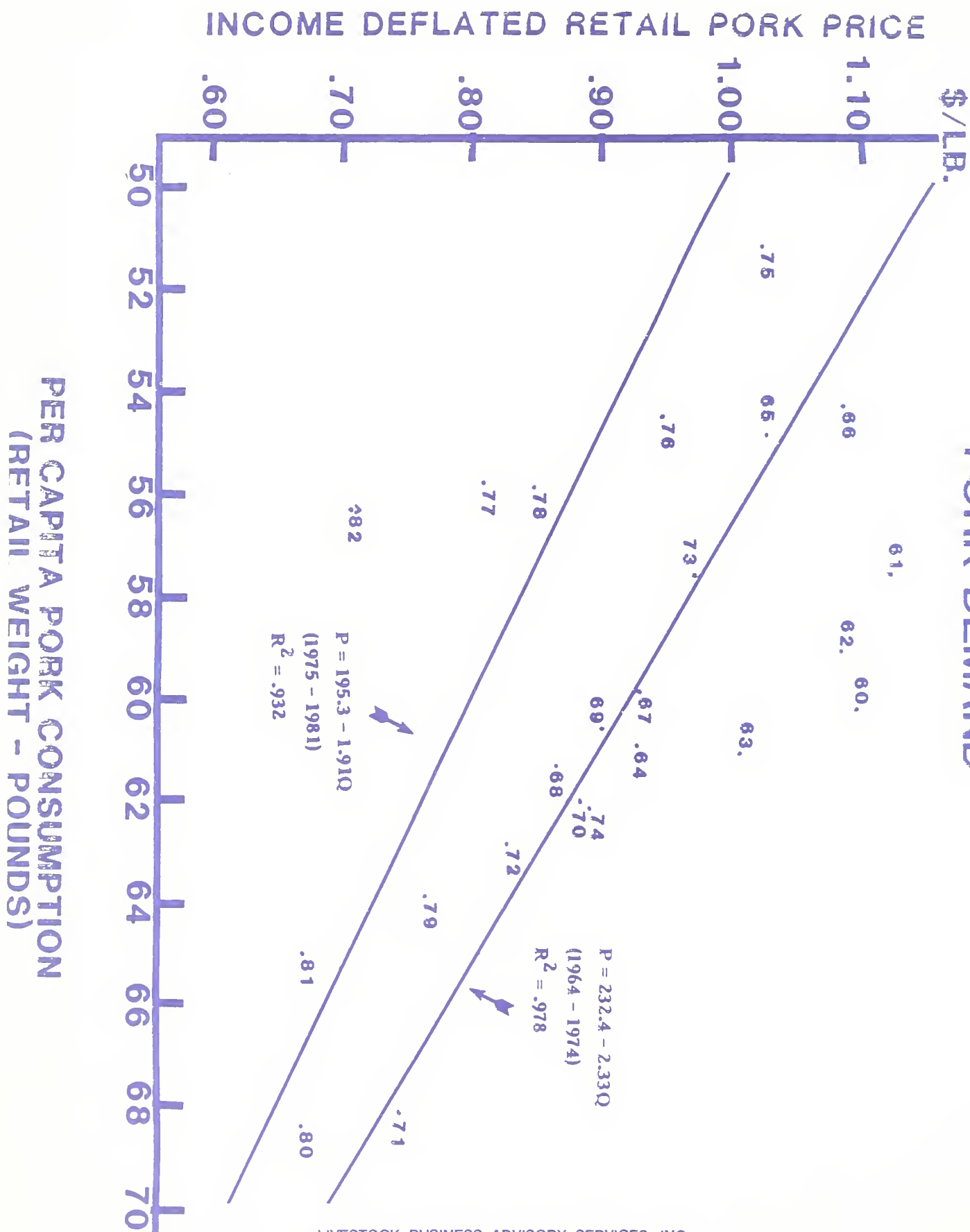
INCOME DEFLATED RETAIL BEEF PRICES

BEEF DEMAND



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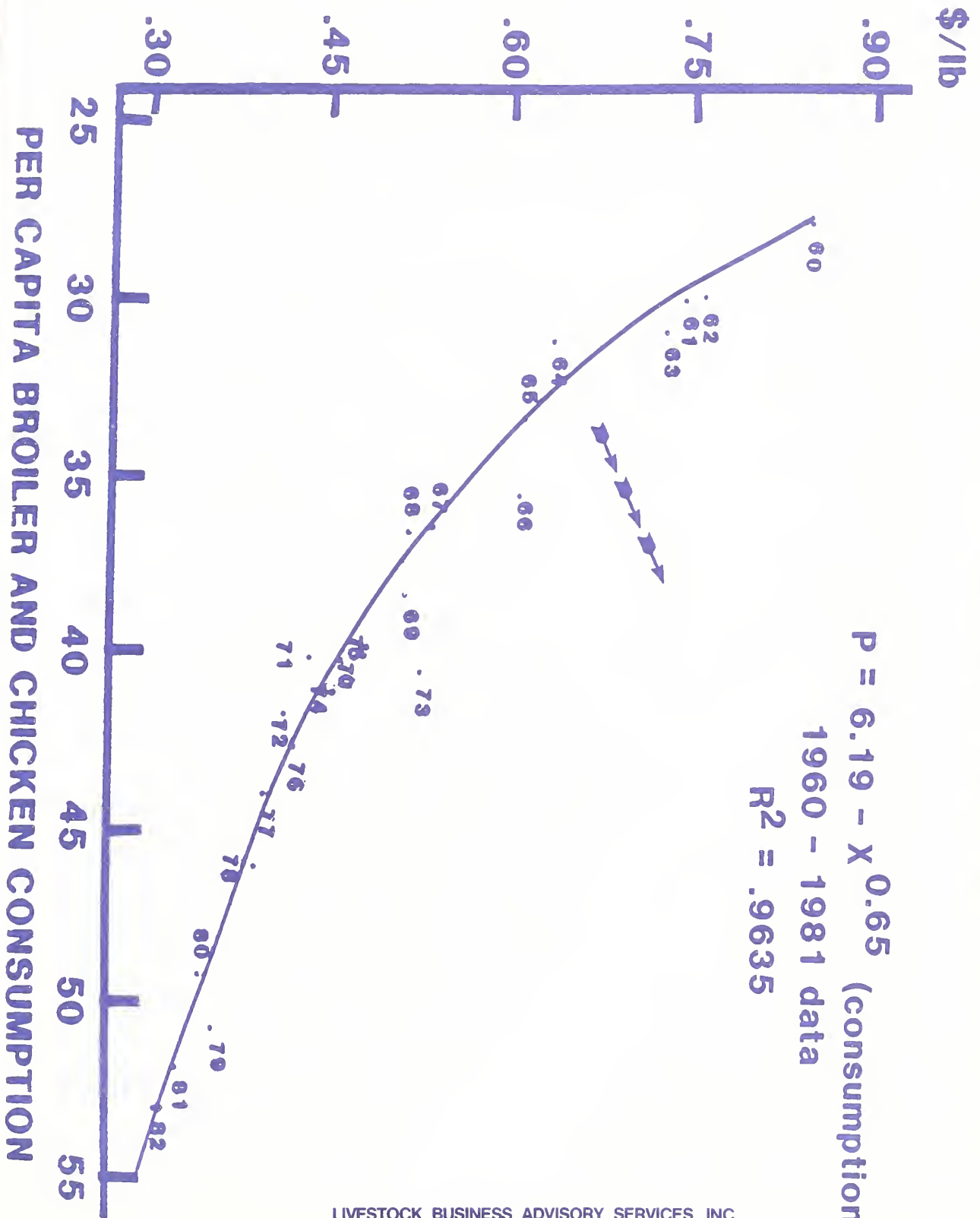
PORK DEMAND



LIVESTOCK BUSINESS ADVISORY SERVICES, INC.

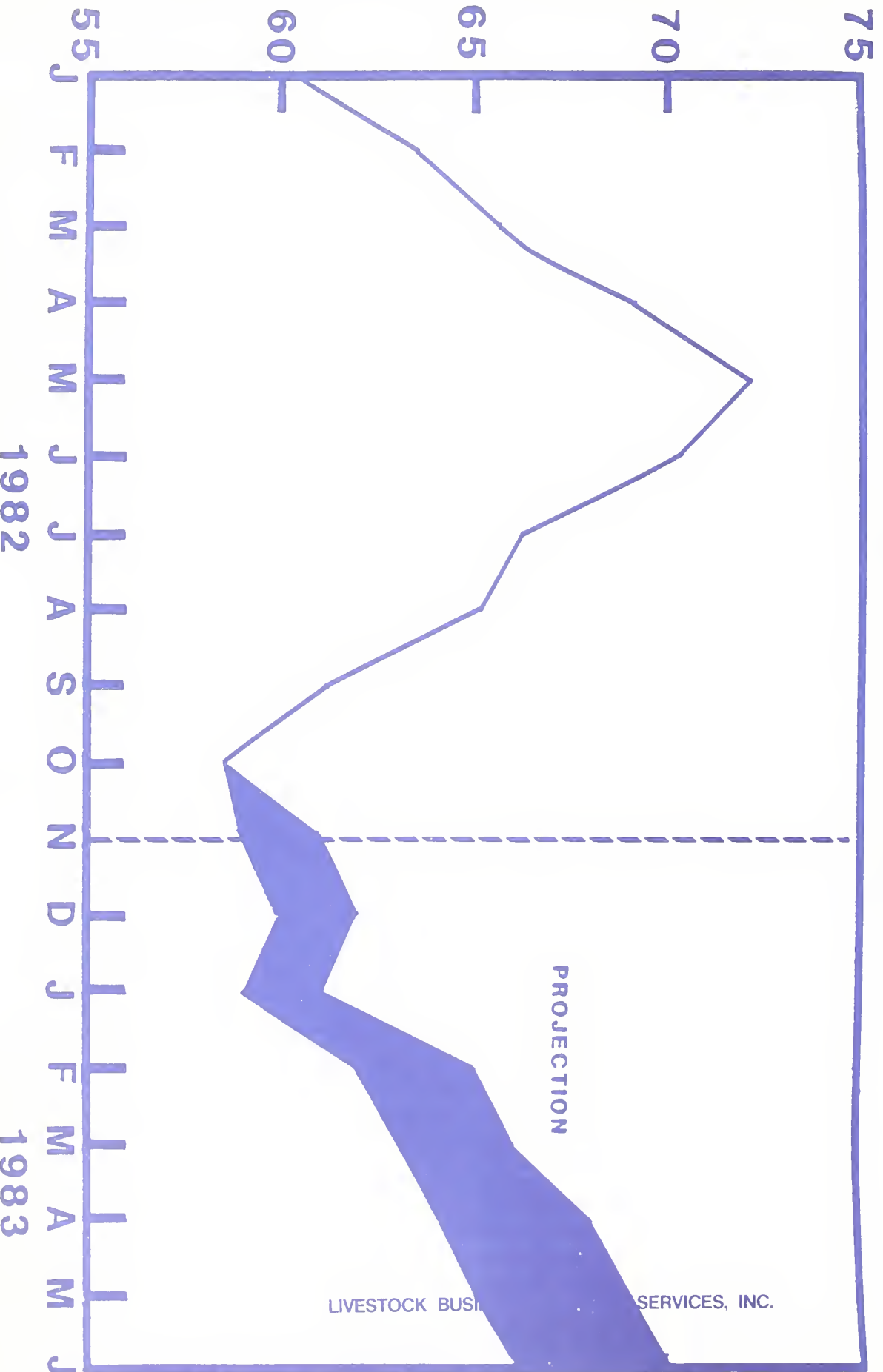
CHICKEN DEMAND

INCOME DEFLATED RETAIL FRYING CHICKEN PRICE



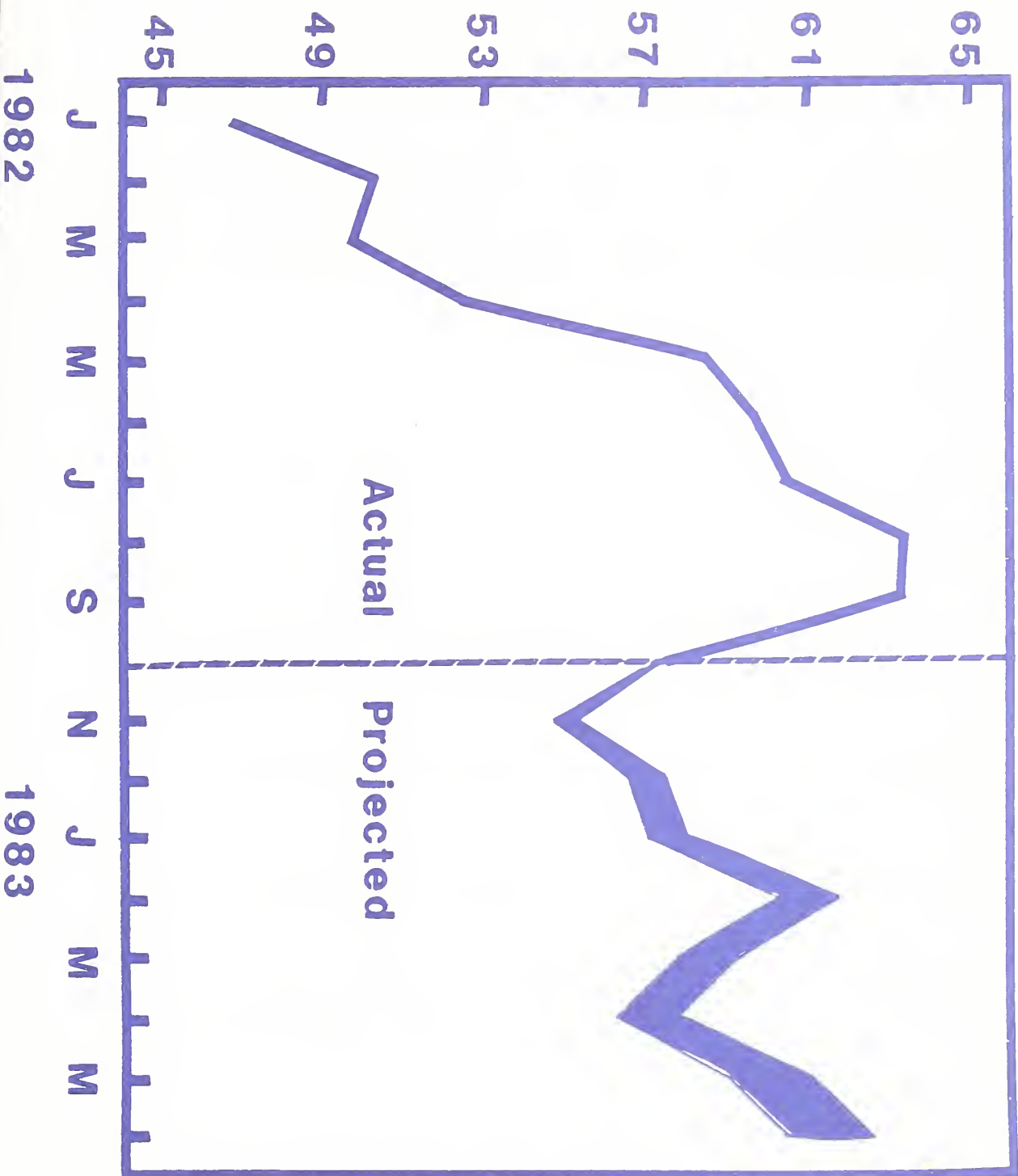
CHOICE STEER PRICE

DOLLARS PER CWT



LIVESTOCK BUSINESS SERVICES, INC.

OMAHA HOG PRICES \$/cwt



Tom Riley, USDA, Food Safety and Inspection Service, PPP/PAO

1983 Agricultural Outlook Conference, Session # 19
Washington, DC

For Release:



Introduction

During today's session, we will be discussing the role that policy analysis can play in regulatory decisionmaking, particularly with respect to international trade issues. The regulatory issues that will be discussed are primarily related to the Federal Meat and Poultry Inspection Regulations which are administered by the Department's Food Safety and Inspection Service (FSIS). The primary mission of this Agency is to ensure that all meat and poultry products, including imports and exports, are safe, wholesome and accurately labeled.

Regulatory issues, especially those that are perceived as restricting trade or as harmful to domestic producers, are frequently highly emotional issues. Policy analysis can facilitate the resolution of these issues in several ways, for example, it can:

1. Provide information that helps in assessing the magnitude of a specific regulatory problem.
2. Demonstrate that there are at least two sides to all issues, and thus help shift the discussion from an emotional argument to an analytical debate over facts and figures.
3. Ensure that all aspects of an issue are considered, such as foreign trade implications, when we consider changes in domestic regulations or our trading partners consider changes in their regulations.

To achieve these ends, policy analysts will generally be involved in the following types of activities:

1. Collecting information about an issue which is to be addressed by policy and/or regulation;
2. Developing alternative ways to accomplish regulatory or policy goals and objectives;
3. Identifying, and if possible quantifying, the costs and benefits associated with each policy alternative, and identifying the secondary effects on competition, prices, supplies, employment and other factors in the affected nations and industries; and,

4. Developing the justification for ranking alternative solutions, in order of desirability, with respect to policy goals and objectives.

The Department's meat and poultry inspection regulations are often involved in foreign trade issues for many reasons. For example:

1. Consumer groups, certain domestic producers and Congressional Committees have expressed concern over the wholesomeness of imported product (e.g. pesticide, residue, or food additive levels), and, therefore, push for tighter controls or new regulations.
2. Domestic producers, domestic manufacturers, or Congressional Committees may seek new regulatory initiatives because of economic concerns, such as what they perceive to be unfairly low prices for certain imported products.
3. Foreign governments may be concerned that U.S. exports have not been produced according to the processing specifications and standards established by their regulations, without regard to final product standards. In other cases, there may simply be a need to resolve inconsistencies between U.S. and foreign regulations.

This has been a brief overview of how meat and poultry regulations relate to foreign trade issues and of how policy analysis can facilitate the resolutions of these issues. In today's presentation, we will illustrate using the following cases, the different roles that policy analysis has played in resolving regulatory issues associated with meat and poultry inspection. To facilitate the presentation, each role is presented separately with an example case, nevertheless, the three roles are not mutually exclusive.

1. The analysis conducted following the 1981 Australian meat substitution incident illustrates how policy analysis can provide new insight into the potential magnitude of a specific problem.
2. The analysis conducted during the 1981 Farm Bill debate on proposed amendments to the Federal Meat Inspection Act provides an example of how policy analysis can ensure that all sides of an issue are considered.
3. A regulatory impact analysis conducted in conjunction with changes to improve the efficiency and productivity of domestic slaughter plants illustrates the need to examine the foreign trade implications of all changes in domestic regulations. In this role, the analysis provides the vehicle that ensures that potential foreign trade impacts are considered in the decisionmaking process.

Case I

In the Summer of 1981, FSIS identified both horse meat and kangaroo meat in shipments labeled as boneless beef from Australia. The staff work conducted following this incident provides an example where policy analysis was able to provide considerable insight into the magnitude of a problem. The intent of the analysis was to provide a point of reference upon which to measure the reasonableness or cost effectiveness of proposed corrective actions.

When the product from Australia was found to be mislabeled for species identification, the U.S. was required by law to halt all shipments of Australian beef which may have been mislabeled and to ensure that product labeled as beef was in fact beef, and not horse meat, kangaroo meat or some other species. This enforcement of domestic regulations was not intended to be a trade barrier to Australian product, but rather to assure domestic industries and U.S. consumers that the imported Australian product was what the labeled declared it to be. Australian officials, concerned that the stigma of demonstrated fraudulent practices be removed from the meat producers of their country, were generally supportive of proposed corrective U.S. initiatives.

Reports of this short term embargo situation had considerable effect on both imported and domestic U.S. beef markets. Analysts within FSIS were asked: 1) to assess the actual costs associated with the short-term market distortions; and 2) to estimate the long-term impacts under a scenario where Australian beef and beef products were embargoed from U.S. markets for one year, with no increases in imports from other countries to offset the loss. The analysis of short-term effects determined that market distortions occurred for approximately eight market days. The analysis showed that these distortions could have: 1) caused prices of all processing type beef to increase sufficiently to result in a \$14.7 million overall cost; 2) caused industry operating expenses (other than raw materials) to increase by \$2.1 million; and, 3) led to Agency expenditures, to correct the identified problems, of at least \$.5 million. The short-term market distortions were attributed to factors including: 1) the extensive use of lean Australian beef by the U.S. processed meat industry; 2) the inability of U.S. producers to produce very lean beef economically, in sufficient quantities and in sufficient time, to satisfy short-term domestic demand; and, 3) the reliance of the U.S. on Australia for over half of the manufacturing type beef imported into this country, which generally precludes obtaining substantial additional supplies from other sources in the short run.

The analysis predicted potentially far greater effects on the U.S. economy if the embargo situation had lasted for as long as one year. The Economic Research Service's Food and Agricultural Policy Simulator Model was used in conjunction with the following assumptions: 1) there would be a one year disruption of imported Australian beef and beef products; 2) 792 million pounds of Australian boneless beef would be prevented from entering U.S. markets; and 3) there would be no increase in imports from other countries since U.S. shifts to other sources would take substantial amounts of time and other sources may not find it desirable to respond to just a temporary increase

in demand. Based on these assumptions, it was estimated that total U.S. beef supplies would decrease by 3.4 percent, that farm prices for beef would increase by 4.9 percent, and that the consumer price index (CPI) for beef and veal would increase by 3.6 percent. The CPI's for beef substitutes such as pork and chicken would also increase. It was also estimated that the CPI for all food would increase by approximately one percent. Analyses of other than the domestic situation indicated that if an embargo took place, Australian producers would probably lose more than \$.5 billion in beef exports.

The information developed through various analytical techniques was forwarded to policymakers along with information on the limitations of the analyses. For example, the data used in the analysis of the short-term effects may not have been exact; however, it did provide some reasonable estimates as to the cause and effect relationship that existed between the beef substitution incident and the wholesale price increases that were observed. Since models are based on assumptions and sequences of certain postulated events, the long-term analysis was also not conclusive. Although these analyses could not prove that the specific costs occurred, or would occur, they did provide decision-makers with estimates of short-term effects and projections concerning the potential impact of a year-long embargo on Australia beef. As a result of the species substitution incident, two new regulatory efforts were initiated, one by the United States and one by the Australian government. Today, the United States routinely collects samples to perform species analyses on imported product and Australia is in the process of developing and implementing a comprehensive inspection system for exported meat products. As policy analysts we can assume that the material provided helped in the decisionmaking process, and that the cost and benefits identified helped support the development of the new programs.

This example demonstrates that policy analysis can provide a means of estimating potential impacts of a specific occurrence and can provide policymakers with information that should be helpful in evaluating alternatives and taking corrective actions. The analysis conducted following this incident provided considerable insight into the potential magnitude of the species substitution problem and helped identify the costs sustained by various sectors of the economy.

Case II

There have been several issues associated with imported meat in recent years. Problems with residue levels detected in some products have raised issues with respect to wholesomeness. In recent years, U.S. producers have been sensitive to the quality and quantity of imports especially since domestic production has not been very profitable. U.S. producers and their Congressional supporters have also questioned the level of inspection that imported meat receives. In this second case, we have an emotional issue where tighter controls are sometimes viewed as having a dual benefit, i.e., ensuring the wholesomeness of imported product while at the same time restricting its flow and thereby benefiting a U.S. balance of trade problem. At the same time others see tighter controls as detrimental to an overall objective of increasing agricultural exports. This area thus provides an appropriate background where policy analysis could take the role of pointing out that there are two sides, associated with all issues.

During the debate on the 1981 Farm Bill, several members of Congress supported amending the provisions of the Federal Meat Inspection Act concerning imported meat and meat products. One proposed amendment would have prohibited the importation of all meat or meat products produced using a chemical or drug that was not permitted, for health or safety reasons, in the production of domestic products. A second, more comprehensive proposal would have prohibited the importation of meat products that had been produced with any chemical, drug or medicated feed not approved for the same use in the United States.

Shortly after these amendments were proposed, analysts in the State and Agriculture Departments, as well as analysts from outside organizations (such as The Office of the U.S. Trade Representatives, The Council of Economic Advisors, and others) were asked to interpret the potential effects of these proposals on U.S. industry and consumers. The analysts initially concluded that enactment of either proposed amendment could severely restrict meat and meat product imports.

In the case of the first proposal, the importation of meat and meat products would be substantially curtailed because some foreign producers use chemicals and drugs explicitly not permitted in U.S. meat and meat product production. Many of these substances cannot be detected in product since there are no acceptable residue tests for a number of these substances. Under this proposed amendment, where the possibility exists of a prohibited substance being present in product that can not be identified through production records or residue analysis, there would be little choice but to reject the product on the assumption that a disallowed substance may have been used.

In the case of the second proposal, importation of a large volume of meat and meat products could be prohibited simply because the use of agricultural drugs or chemicals by foreign producers sometimes differs from the use of these substances domestically, or because the foreign controls on the manufacturing, processing, packaging, or labeling of these drugs or chemicals are different than domestic requirements.

Another potential effect of either of these proposals would be the possibility reciprocal trade actions initiated by our trading partners. This could severely restrict our export markets for agricultural commodities and industrial items. U.S. exports of agricultural commodities totaled approximately \$43.7 billion in crop year 1981, while agricultural imports totaled only \$17.2 billion that year.

The final major effect of enactment of either of these proposals would be the need for a comprehensive study by the Department of Agriculture to determine what specific agricultural chemicals, animal drugs, and medicated feeds are used in each of the countries which export meat and meat products to the United States and to determine whether these substances are approved for the same uses in the United States.

In summary, the policy analysts (inside and outside the Department of Agriculture) evaluating the potential effects of implementing either proposed amendment generally agreed that in both cases, enactment could have serious

impacts on U.S. agricultural trade and could violate obligations under the General Agreement of Tariffs and Trade. One impact would be the retaliation by our trading partners through imposition of similar restrictions or amendments of certain trade concessions which had previously been negotiated. This could have an adverse effect not only on U.S. exports of agricultural commodities, but also on the export of high technology industrial trade items. As a second likely impact, industry and consumers would suffer since these amendments would reduce the availability of lean manufacturing type beef used in further processed products, and decrease the supply of many meat speciality items in the marketplace. Implementation would not only disrupt foreign trade, but would also jeopardize the Administrations's Caribbean Basin Plan and other foreign policy initiatives.

These and other conclusions developed by the various groups of policy analysts, as well as information on the limitations of the analyses, were passed on to policy makers. One important qualifier was that since the language of the proposed amendments was somewhat vague, various interpretations were possible, and there were differences in interpretation among the analysts. Nevertheless, they all made similar projections concerning the type and magnitude of the potential effects. They were also able to provide information to policy makers which strongly suggested that implementation of either of the proposals would not serve to protect the public health and safety to any significantly greater degree. Many of the analysts involved with the project pointed out that there was no scientific evidence to suggest that even a total ban on imported agricultural food products would have the effect of providing the consumer with greater protection and, further, that there was no scientific reason to conclude that domestic product contains fewer residues or lower levels of residues than imported product.

The findings of the policy analysts indicated that passage of either amendment would not be in the best interest of the U.S. public or industry. These findings presumably helped convince policymakers to reject these proposed amendments. Furthermore, this example demonstrated that regardless of the relative accuracy of the analyses or the limitations associated with preparing the analyses, policy decisions can still be facilitated as long as the analysts are capable of determining the relative direction and magnitude of the impacts associated with a proposal.

Case III

Our final case is included to illustrate the role where policy analysis helps ensure that all aspects of an issue are at least considered when decisions are made. Occassionally, regulatory changes are considered for domestic meat and poultry operations that are not intended to affect foreign trade directly or indirectly, but which ultimately may do so. Therefore, regulatory modifications considered should be accompanied by an analysis that at least raises the question of potential impacts on trade, especially when those changes could have a substantial impact on domestic production costs.

A recent case involved the internal consideration of new cattle post-mortem inspection procedures. The purpose of these changes would be to

increase the efficiency of plant and government operations by increasing the number of carcasses inspected per hour, while maintaining the same level of effectiveness for post-mortem inspection.

As an internal proposal was being developed, our staff was asked to perform an analysis to determine: 1) the potential annual savings to industry and government if all eligible domestic cattle slaughter plants were incorporated into the new system; 2) the effect of the new system on industry and government per unit production cost; and, 3) the effect on imports and exports. There were limited historical data with which to analyze the potential effects of implementing the new procedures considered. The analysts, therefore, relied primarily on information about experiences gained when similar procedures were implemented in domestic swine slaughter operations in 1981. Using industry and Federal estimates on employment, plant size, slaughter costs, and other factors, analysts determined that those segments of the industry which implemented new swine slaughter procedures in 1981 had an average annual increase in productivity of 14.6 percent and an annual average aggregate savings of approximately \$98 million in labor costs. The net result of using the new swine slaughter procedures was an estimated decrease in production costs of \$1.34 per animal.

We recognized that a change in domestic production costs could have an impact on trade. However, not enough data were available to determine the exact effects on imports or exports. Even using traditional economic assumptions about stable prices, markets and supplies, and exchange rates; available models demonstrated that U.S. imports and exports of pork products could fluctuate moderately. The primary reasons for these situations could be attributed in part to export and import contracts, diverse and changing consumer preferences, fluctuations in comparative exchange rates between the dollar and other major currencies, and domestic production cycles. Therefore, since an exact determination could not be reasonably made on the effects of the swine slaughter regulations with respect to foreign trade, an extrapolation of those effects could not be applied to the cattle slaughter changes under consideration. However, the analysis did point out that fluctuations in foreign trade, that could be caused by this regulatory proposal, would not cause a major impact.

In summary, the analysis demonstrated that reasonable projections on domestic market behavior could be developed, using historic swine data, when estimating the potential effects of implementing similar cattle slaughter procedures. Projections on import/export market behavior were somewhat limited using the historic swine data due to the state of flux of international market conditions. However, through the various analyses performed, it was concluded that the likely benefits in domestic markets would far outweigh any possible adverse reactions in foreign markets.

Although the analysis did not reach any definitive conclusions, the analysts provided information to policymakers that should help them determine the course of action to follow with respect to the changes considered. The important point is that the question of possible impact on trade was at least raised and considered.

Concluding Remarks

During this session, we have discussed the role that policy analysis can play in regulatory decisionmaking, particularly with respect to international trade issues. We have demonstrated that policy analysis can facilitate the resolution of regulatory issues with foreign trade implications by:

1. Providing new insight into an issue by demonstrating cause and effect relationships;
2. Removing the emotional aspects of an issue and examining the issue objectively in terms of facts and figures; and
3. Ensuring that all aspects of an issue are considered.

We have also pointed out that all analyses have limitations and that analysis is only one source of information available to the decisionmaker. We believe that policy analysis can play a valuable role, but because analysis is not an exact Science, it should never replace the judgement or the institutional wisdom of the policymaker.

Thank you.

Graham T. T. Molitor, President, Public Policy Forecasting, Inc.

1983 Agricultural Outlook Conference, Session # 19
Washington, D.C.

For Release: Tuesday, November 30, 1982



BELL-WEATHERS OF PUBLIC POLICY CHANGE

Many think America leads the world in everything. That notion is not true.

U.S. pure food law was patterned after one enacted in Great Britain some 46 years earlier. Synthetic colorants were banned in France 21 years before similar response in America. National macro-nutrition goals were established in Sweden 6 years ahead of the U.S. (Exhibit 1).

This lead-lag phenomena between the first adopter and America pertains to a wide range of other issues: sickness and maternity benefits, 82 years; work injury assistance, 24 years; old age assistance, 46 years; unemployment insurance, 41 years; national hospital planning laws, 20 years; female suffrage, 27 years; slavery, 68 years (Exhibit 2).

A tiny vanguard of nations usually are in the forefront of change. Currently first-adopter nations include Sweden, Norway, Denmark, The Netherlands, Switzerland (certain cantons), West Germany, Great Britain, the United States, and Canada. Adoption often occurs in that very sequence like a string of falling dominoes (Exhibit 3).

For literally centuries new laws first cast into public policy in Europe eventually find their way to America. Fore-knowledge and an opportunity to stay ahead of impending waves of change often can be accomplished simply by observing what has been undertaken in select Western European nations. "Precursor nations" provide in effect, an early warning system for public policy change likely to occur elsewhere.

POST-INDUSTRIAL SOCIETIES AND THE EMERGENCE OF NATIONAL MACRO-NUTRITION GOALS

In 1957 America became the first service economy in the world. Over 50% of the workforce at that point, was engaged in pursuits other than producing material goods (Exhibit 4). Brains replaced brawn so that arduous work no longer dominated lives.

Adding to sedentary lifestyles, the workweek has shrunk from 70 hours in 1850 to less than 40 today; vacations became longer, more holidays have been granted, leaves of absence are more liberal, and earlier retirement is possible.

One important consequence of an "easier life" has been reduced human energy needs and a consequent need to lower caloric intake.

"Cultural changes" such as reducing food intake, however, are slow to be accomplished. Consequences of this "cultural lag" entail serious problems. Overconsumption and obesity now afflict 20-60% of the population. Overeating has become a major focal point for food policy considerations. Caloric consumption simply exceeds needs associated with more sedentary post-industrial lifestyles.

Many sedentary post-industrial societies already have established national macro-nutrition goals devised to encourage selective diet changes.

United Nations Food and Agricultural Organization macro-nutrient recommendations published in 1977 are typical of the goals endorsed by the various nations, nutritionists and technical experts. Optimal dietary intake suggestions include: 15% of caloric intake from protein; 30 to 35% of caloric intake from dietary fat (with reduced saturated fatty acid content, and linoleic acid content amounting to at least one-third of total fatty acids); and 50 to 60% of total calories from carbohydrate. Other reductions are recommended for salt, sugar and alcohol consumption, and a maximum daily intake of 300 mg. cholesterol also has been proposed.

The first nation to adopt macro-nutrition goals was Sweden in 1971. Next came The Netherlands, 1973; Norway, Finland and Denmark in 1975; West Germany and Canada in 1976; U.S. (and UN-FAO) in 1977; Great Britain in 1978; and Australia in 1979. Establishment of the goals in America lagged the first adopter, Sweden, by 6 years.

COMMODITY PROMOTION CAMPAIGNS

National macro-nutrition goals urge increased consumption of complex carbohydrates and fiber. To help realize these objectives promotional efforts to raise per capita consumption of wheat and potatoes, in particular, have received government encouragement and support.

Commodity promotion campaigns to increase wheat consumption were undertaken in West Germany, 1971; Sweden, 1976; Switzerland, 1977; France, 1978; England and Australia in 1979; Canada, 1981; and The Netherlands and the U.S. in 1982 (Exhibit 5). The lapse between the first adopter and the United States was 11 years in this case.

SOME FACTORS ENCOURAGING WHEAT PROMOTION EFFORTS

One particular cause for concern has been the decline in crude fiber consumption in the U.S. since shortly after the turn of the century. Daily per capita consumption of 6.1 grams during 1909-13 had dropped to 4.18 grams by 1981 (Exhibit 6). National dietary goals and a wide variety of scientific and popular literature encourage increased consumption of foods high in fiber content. Grain products of all kinds are major sources of dietary fiber (Exhibit 7).

Penny-for-penny studies prove wheat products to be one of the least expensive sources for a range of important nutrients. The current economic recession restricts purchasing power and exerts an influence on increased consumption of lower costing nutritious food such as wheat.

Nutrition considerations, particularly the impetus of national nutrition goals, and hard economic times which encourage consumption of low-cost healthy foods are two good reasons why a wheat promotion campaign is timely.

Wheat availability furthermore has been increasing as production output continues to grow. Wheat production worldwide has nearly doubled from 1960 to 1981-82 (Exhibit 8).

VARIATIONS IN HUMAN CONSUMPTION OF GRAINS

Total grain annual per capita consumption during 1973-1975 ranged from a high of 1755 pounds in the U.S.S.R. to a low of 282 pounds in the lesser developed countries (LDC's) of Africa (Exhibit 9).

Nearly one ton of grain is consumed per capita in more affluent countries. Most of it is consumed indirectly in the form of secondary proteins (dairy products and eggs) and tertiary protein foods (meat and poultry).

By stark contrast, in the poorest nations less than one pound per day of grain is consumed per person. Very little, if any, of this grain consumption consists of meat or dairy products. Virtually all of it is directly consumed as grain.

Amounts of grain required to produce a given unit of secondary or tertiary proteins -- grain conversion ratios -- vary considerably. As much as 20 pounds of grain may be required as feed to produce 1 pound of beef. High consumption levels of secondary and tertiary grain-based products in affluent countries account for the vastly larger quantities of grain consumption per capita.

Bread enjoys a particularly favorable grain conversion ratio. Note that only 0.9 pound of grain is required to make one pound of white bread (Exhibit 10). Clearly, bread is a convenient (and popular) product for getting grains to the people.

Dietary traditions and preferences, local availability and cost, religious practices and vegetarianism are just a few of the many and diverse factors influencing wheat consumption.

Government policies in Turkey make wheat relatively inexpensive. One result of these policies is that consumption of wheat in Turkey is larger than in any other nation. During the 1960-62 period wheat accounted for 58% of the total daily calories consumed (Exhibit 11).

Uganda, at an opposite extreme, consumed the least quantity of wheat per capita. Ugandan consumption of wheat during the 1960-62 period amounted to only 1% of the total daily calories consumed (Exhibit 11).

Among most of the 10 countries which have undertaken wheat promotion programs consumption of total grain (as flour) is relatively modest. Annual per capita consumption for 8 of the nations ranged between 130-168 pounds during 1978-79 (Exhibit 12).

Note also that grain consumption in the U.S.S.R. is more than twice that in the 8 countries perviously mentioned (Exhibit 12). That high level of direct grain consumption, long considered a stigma and a bane to Soviet planners, may turn out to be a boon. The boon depends on the outcome of health consequences which may be associated with a higher direct intake of grains.

DIRECT WHEAT CONSUMPTION DECLINING IN MANY DEVELOPED COUNTRIES

Wheat consumption in most advanced industrial nations has been in decline for more than a century. Long considered a dietary staple and often regarded as the "staff of life," wheat consumption has declined by as much as one-fourth to one-third in many Western European and North American countries (Exhibit 13). In many of those nations hamburger has replaced bread as the basic staple around which main meals are based. In this sense, hamburger now is considered by some to have become the "staff of life."

Statistics dating further back than the turn of the century tend to be dubious, with some exceptions. England is one of those nations for which early statistical data is quite reliable. Over 100 years ago, in 1880, apparent wheat flour per capita consumption annually in the U.K. amounted to 127 kilograms. Since then consumption has plummeted to almost one-half that level, totalling 66 kilograms in 1976 (Exhibit 14).

In the U.S. the pattern was much the same. Wheat flour apparent annual per capita consumption of 99 kilograms in 1909 declined by nearly 50%, dropping to 53 kilograms in 1978 (Exhibit 15).

Wheat flour apparent consumption in Australia also experienced a similar decline. Consumption of 92 kilograms in 1949 had declined to 68 kilograms by 1978 (Exhibit 16). Bread accounted for the largest proportion of wheat consumption.

Australian annual bread consumption experienced a decline parallel to that for wheat flour. Per capita consumption dropped by 50% between 1920 and 1978 (Exhibit 17).

DISPARITIES IN FOOD STATISTICS

A few words about food statistics and amounts of food actually metabolized are in order. Statistical data used throughout this report merely indicates a trend and direction.

Statistics are, at best, a rough approximation of reality. Such data is especially useful in depicting relative trends and ascertaining a generalized understanding of where things stand.

Knowledgeable persons in this country and abroad concede that the quantity of food consumed represented by disappearance statistics may be as much as 25% greater than amounts actually consumed.

Food available for consumption -- food disappearance data -- may be some 20% above food intake measurement based on household surveys.

Biological or metabolic availability of certain foods and nutrient components may be as much as another 10-20% further below consumption levels indicated by household survey data.

In other words, differences of up to 40%, depending on what data is used for calculations, may be possible (Exhibit 18).

At a bare minimum it is probably fair to state:

- Food disappearance data probably is overstated.
- Household survey data is probably understated, but is more realistic as to what actually is consumed.
- Biological availability of foods is seldom stated, and is the most realistic measurement of actual consumption.

WHY BREAD CONSUMPTION IS DECLINING

Contributing to the decline in bread consumption are many factors. A few of them are worth noting here.

Sedentary lifestyles and consequent lowered energy intake needs are a major part of the answer. Transition to less arduous work associated with post-industrial societies, coupled with the vast increase in leisure time figure prominently in these considerations. In response to these drastic changes caloric intake in post-industrial nations has been decreasing. Consumption of certain foods, wheat and potatoes foremost among them, have been cut back, in efforts to decrease human energy intake.

Lack of understanding concerning the positive nutritional value of bread, or widespread (but mistaken belief) that bread is low in nutritional value discourages other consumers.

Another popular misconception is that bread is fattening. Many dieters feel that by reducing the intake of wheat and wheat foods they are making significant cutbacks in dietary intake. ~

Increasing affluence, involving a shift away from traditional staples to processed and prepared foods, accounts for some part of the decline.

Availability of a wide variety of competing foods, including snacks and away-from-home eating, tends to reduce bread consumption.

Decreased wastage of bread also has a bearing on "disappearance" food consumption data. Longer shelf life, better storage in refrigeration or freezer units, and the advent of improved packaging and preservatives severely limit the quantity of bread that might otherwise spoil and be disposed of.

Production of less dense loaves (lighter textured) bread may account for a drop in the actual weight of bread consumed. However, the number of slices consumed per day may actually remain relatively constant.

Shift from bread products to biscuits and crackers also should be considered in sizing up declining consumption. Bread is relatively high in moisture content, 40%; whereas, biscuits contain only 2-5% moisture. The "wheat-equivalency" and higher nutrition density of increased biscuit consumption should be taken into consideration.

WHEAT AND WHEAT FOODS PROMOTION CAMPAIGNS

Wheat and bread promotion campaigns have been undertaken periodically over the years. During the 1970's at least 10 nations undertook promotional efforts intended to increase the consumption of wheat foods.

West Germany became the first nation during the 1970's to undertake a nationwide campaign to promote wheat foods. Commodity promotion efforts were launched in 1971. Apparent human consumption of wheat tonnage increased by 12.5% from 1971 to 1982. Population over the same time period declined slightly. Annual consumption of bread and rolls paralleled this trend, rising from 155 pound per capita in 1977 to 161 pounds in 1980 (Exhibit 19). Funding was provided by government order with money actually coming from agricultural users, millers and bakers.

Advertising has stressed a wide range of themes. One approach stresses the wide variety of choices among bread products. Germany claims 200 varieties of bread. Another advertisement touts staying slender with bread. A slimming "bread diet" developed in West Germany has formed a basis for bread promotion of a different sort. During 1975-1976, 45 subjects ranging 5-40% overweight were placed on a 1300-1400 calorie diet in which bread constituted 46% of total daily consumption. Over a 4-week test period the subjects each averaged a weight loss of 13¼ pounds. Following experiments conducted at the Institute for Nutrition Science at the University of Geissen, bread slimming diets developed by Professor Menden were endorsed by the German Nutrition Society. Similar studies have been conducted at Michigan State University in the U.S. The so-called "European Bread Diet" recommends that 60% of total calories come from carbohydrates, and 20% each from protein and fat.

A related advertising theme plugs staying slender, fit and healthy by following the right diet, including bread and grain products.

Another theme stresses the significant nutrients obtained from bread products.

Children also receive special attention in the promotional campaign. Bread's importance in "brown bagging" and as a complement to a well-balanced lunchtime meal are among the other themes.

The slogan for 1982, "Bread Is Nature Baked In the Oven," emphasizes bread as a "natural" food.

Sweden began bread promotion efforts in 1976. According to one report annual per capita consumption of bread increased from 29 kilograms in 1976 to 31 kilograms in 1980. Apparent human consumption of gross wheat tonnage in Sweden declined by 0.5% between 1976 (when commodity promotion was undertaken) and 1982 (Exhibit 20).

Sweden, as noted previously, was the first nation to establish and implement national macro-nutrition goals. As early as 1969 the Swedish National Board for Health and Welfare had recommended that wheat consumption be increased by 25%. Promotional materials and themes strongly encouraged increased consumption of grain products, and wheat in particular. From 1971 (when Sweden adopted its national macro-nutrition goals) to 1982, apparent

human consumption of wheat tonnage in Sweden increased by 16.5%. Over the same period the Swedish population increased by 3.8% thereby offsetting any increases to some extent (Exhibit 20).

National nutrition goals coupled with the bread promotion campaign apparently have had an impact. The effect of mandatory price controls and government subsidies (which had the effect of reducing consumer prices) had a bearing on these consumption trends.

The Swedish Bread Institute began preparatory efforts for a bread promotion campaign during 1975-1976. By 1976 a promotion fund of \$666,000 had been raised among millers, bakers and agricultural cooperatives. Bakers voted a 50% increase in funds for 1982-1985 efforts.

In cooperation with and authorization from the Swedish National Board of Health and Welfare, one controversial promotion stated: "The Health and Welfare Administration wants us to eat 6 to 8 slices of bread each day." Another re-phrasing stated: "The National Board of Health and Welfare recommends 6 to 8 slices of bread every day." The 6 to 8 slice recommendation theme begun in 1979 ran for over 3 years.

Another theme from the advertising campaign conducted from February to May 1976 asserted, "Most people who are reducing should eat more bread." This ad, in the nature of a testimonial by a well-known Swedish dietary expert, associated an authoritative personality with the message. The Bread Institute reported that the number of Swedes who thought bread was fattening dropped from almost 80% in 1976 down to 17% in 1980. Furthermore, 65% of those polled positively considered bread not to be a fattening food. One unique Swedish ad theme stated, "Bread Is Good For Your Teeth." The ad featured a female dentist and was followed up with a brochure entitled, "Bread and Teeth."

Other Swedish promotion themes featured: nutritional value of bread; the importance of bread at breakfast, lunch, for snacks, at restaurants and in sandwiches.

Switzerland embarked on bread promotion efforts in 1977. Swiss bread promotion activities in 1977 cost \$500,000. Promotional efforts in 1978 involved a reported budget of \$400,000 or 6.4¢ per capita.

From 1976 when promotions got underway to 1982 apparent human consumption of wheat tonnage declined by 3.9%. Using 1977 as a base year calculations are different; from 1977 to 1982 wheat consumption showed an increase of 9.5%. Using 1971 as the base year, by 1982 wheat consumption declined by 18.6% (Exhibit 21).

Media used for promotions included radio, TV, posters and printed materials. Educational materials also were sent to medical professionals, nutritionists and public health officials. A mini-newspaper, the Gazette on Bread, was also distributed to bakers for handouts.

France commenced a bread promotion campaign in 1978. From 1978 (the date when promotion began) to 1982 apparent human consumption of wheat

tonnage in the country increased by approximately 1%. From 1971 to 1982 the gross tonnage of wheat consumed increased by 8.9%; population over the same period increased by 6.1%, thereby substantially offsetting any gain(Exhibit 22).

French promotional efforts aimed at increasing bread consumption were financed solely by the government. Only \$156,000 was budgeted for this activity.

One unique educational approach taken was a card game devised by the French Health Ministry. The card game stressed balanced food consumption. It emphasized bread and cereal grain products (among others), and dunned alcoholic beverages and products high in fat and sugar.

United Kingdom bread promotion started anew in 1979: Bread -- the Family's Greatest Supporter." The new theme for the 1982 promotion is "Go Ahead, Enjoy Your Bread." Previous promotions were undertaken in 1930 ("Eat More Bread"); 1956 ("Enjoy Good Health With Good Fresh Bread"), and 1970 ("Six Slices a Day Is The Well-Balanced Way").

Between 1979 and 1982 apparent human consumption of wheat tonnage in the nation continued to decline, dropping by 7.2% (Exhibit 23). Like many other recent efforts in England, nothing seems to work.

The Royal College of Physicians of London established during 1978 a working party on the medical aspects of fiber. The report published in 1980 stressed the importance of dietary fiber and pointed to bread as the most important source. Dietary fiber consumed daily in the U.K. amounted to 10.9 grams per capita in 1909, rose to an all-time high of 40 grams during WWII as a result of special diet programs, and then declined to 8.1 grams daily per capita in 1970. As in most other advanced affluent nations concern over declining consumption of dietary fiber provides an impetus for promotion featuring bread and other grain products.

In 1978 the U.K. government Department of Health commissioned a report on the "Nutritional Aspects of Bread and Flour." The Committee on Medical Aspects of Food Policy issued the report in May 1981. The report included 13 basic recommendations. Three of those recommendations provide a scientific basis and government support for the bread promotion campaign:

- "1. the consumption of bread, whether it be white, brown or wholemeal should be promoted and bread should replace some of the fat and sugar in the diet;"
- "2. nutrition education should stress the value of bread as a source of nutrients and of cereal fibre in the diet;"
- "9. information relating to the extraction rate of the flour used for breadmaking and of the cereal dietary fibre content of bread should be made available to the consumer by an agreed form of labeling;"

Beyond the usual reasons cited for declining bread consumption, U.K. research also pointed to: decline in afternoon tea tradition; breakfast "skippers;" less "brown-bagging" (and more catered food service); demise of conventional home delivery; and the switch from low-cost "common" foods to more costly and "fashionable" foods.

As previously noted, the U.K. has been buffeted by a considerable number of themes promoting bread. Various themes, rather than a single main anchoring one to help emblazon the importance of bread in the public conscience may actually detract from campaign effectiveness.

The advertising theme adopted in 1979, "Bread -- The Family's Greatest Supporter" apparently lacked enough force to win the hearts and minds of the consuming public. Somehow a 5-member family situated atop a loaf of bread strikes me as not conveying any strong sense as to why I should be eating more bread. Perhaps the subtleties of the British psyché are attuned to such a message and image. Frankly, I'm not surprised that its effectiveness has been so lackluster. If you are going to promote bread, then it occurs to me that one should do so directly and forcibly.

Another series of ads wins plaudits for the marketer who dreamed up its demographics. Many important age segments and groups are reached. Messages stress the role of bread in lunches for the very young, the school child, the blue collar worker, and the female dieter at home alone during the day. However, pitching bread on the basis of "support" it provides to these groups strikes me as being far too generalized as to be effective.

The 1982 promotion theme, "Go Ahead Enjoy Your Bread" seems to be more on target. The specific message of ads carrying out this theme attack misconceptions about bread head on. For example the notion that bread is a fattening food is stressed in several ads. Other ads point out the value of bread in a packed lunch or for sandwiches generally. However, ads which merely stress that bread is "good," also seem to fall short of the mark.

Another ad takes advantage of the government report touting bread. The ad itself includes a picture of the official government report. Tie-ins with official government sources can be effective. However, a one-shot ad will not impart the sort of deep and memorable impressions such a campaign (hopefully) should instill.

Still another approach features the low cost value of bread penny-for-penny in comparison with meat and dairy products.

One theme, "You like bread. Bread likes you," is particularly weak. Specific themes used in the main text of the ads are more on point. One aimed at pregnant women stresses the importance of sound diet to help assure the well-being of babies. Another specific pitch extolls the value of bread in slimming diets.

From these myriad themes and numerous and diverse specific messages one comes away with a sense of many wrongs that need to be righted. The dizzying array of ad themes and subjects leaves me a bit exhausted. I never quite know what to expect over the crest of the next hill. A few themes stressing powerful inducements to action may have been more effective. We should be able to learn a great deal from the considerable U.K. advertising efforts. Cross-cultural studies of what has been tried and proved is the basic reason for reviewing experience in early adopter nations.

Australia began promoting bread and flour consumption in 1979. Between 1979 and 1982 a 20.7% increase in apparent human consumption of wheat tonnage in Australia had come about (Exhibit 24).

In April 1978 the Flour Millers' Councils of Victoria and New South Wales undertook a pilot study to determine possibilities for increasing the per capita consumption of flour. Shortly thereafter a report entitled, "The Role of Australian Bread and Flour in Health and Nutrition" laid the foundation for conducting a commodity promotion for wheat and wheat products.

Coincident with launch of the wheat promotion efforts, national macro-nutrition goals also were established by the Australian Commonwealth Department of Health. These goals, like those established by other governments and governmental organizations, called for an increase in per capita consumption of complex carbohydrates and fiber -- the opening gambit for encouraging increased consumption of wheat.

To what extent widespread notoriety of these goals helped to boost wheat consumption is uncertain. Also uncertain is the effect of the economic downturn on consumption. Low-cost staples with sound nutrition value, such as wheat foods, usually experience dramatic consumption increases during hard times.

Canada, through the Bakery Council of Canada announced a \$350,000 bread and bakery products promotion campaign in June 1981. Between 1981 and 1982 apparent human consumption of wheat tonnage in Canada increased by less than 1%. Between 1971 and 1981 apparent human consumption of wheat gross tonnage in Canada increased by 21.3% (Exhibit 25).

"Don't Forget the Bread" is the theme selected for the Canadian bread promotion campaign. Full-color advertisements have been disseminated in major magazines and 19 newspapers. Various booklets and brochures tout the nutrition value of enriched bread products. Opinions of experts on the subject provide testimonial to the nutritional worthiness of bread. How effective such promotional materials may be is questionable. Much depends on the extent and effectiveness of distribution. Such materials seldom receive enough exposure to have much effect beyond the creators and other industry "insiders."

Other promotional messages in booklets stress the utility of bread for sandwiches.

Recommendations by the Bakery Council of Canada are worthy of special mention. The "Allotted Daily Intake" (ADI) of bread per capita has been set at five slices a day. This fixed recommendation provides a good target for promotions. Note also that the level set is considerably below the 6 to 8 slices endorsed by the Swedish government.

The Netherlands commenced an \$800,000 wheat food promotion campaign in 1982. Efforts are too fledgling to ascertain effectiveness. From 1973 when national macro-nutrition goals were established in the country (1973) to 1982, apparent human consumption of wheat tonnage in The Netherlands grew by 2.1% (Exhibit 26).

Establishment of national macro-nutrition goals has prompted re-thinking of the way in which basic food groups are depicted. Food groups were devised years ago to communicate in a non-technical way basic classes of foods required for a well-balanced nutritional intake. In the past little, if any, effort was devoted to "weighting" suggested proportional intake from each of the food groups. Among the proportional or "weighted" food group renditions developed in The Netherlands are a triangle with portions of the triangle depicting relative suggested intake levels for each food group. So-called "luxury foods," expensive foods with nutrition properties slated for reduced intake -- fats, sugar, cake, cookies, baked confectionery, marmalade, sweets, chocolate, sweet drinks, mayonnaise, etc. -- occupy only the small tip (1/16 of total area) of the triangle. Supplementary foods (mostly fruits and vegetables) in the mid-section are allocated $2\frac{1}{2}$ x the area allotted to the tip. Basic foods, low cost foods for which increased consumption is suggested -- bread, potatoes, lean meats, etc. -- dominate the very large bottom layer of the triangle occupying $3\frac{1}{2}$ x the area devoted to the tip.

United States apparent consumption of wheat tonnage rose 20% from 1971 to 1982; population increase of 12% over the same period offsets the net gain to 8%. From 1977 when national macro-nutrition goals were established to 1982 apparent human consumption of wheat tonnage in the U.S. rose more than 6% (Exhibit 27).

The Wheat and Wheat Foods Research and Nutrition Education Act, Public Law 95-113, was enacted in 1977. The Wheat Industry Council, headed by an Executive Director, C. Joan Reynolds, was established in 1981 to carry out the scientific, educational, communications and industry relations functions. The first wheat promotion campaign, utilizing broadcast and print media, has been scheduled to commence during 1982.

Contributing to health and well-being through promoting the quality and use of wheat, processed wheat and wheat end products are fundamental WIC objectives. To this end educational programs extolling the nutritional and economic values of wheat foods will be undertaken. Dispelling deep-seated and widespread misconceptions that wheat foods and fattening or nutritionally insignificant are among WIC's foremost challenges.

Food retailers over the years have helped to promote nutritious foods. A brochure from Alpha Beta supermarkets -- "Bread: An Excellent Source of Energy", a booklet from Giant Foods -- "What About Fiber?", and a food features column written by Jane Armstrong of Jewel Food Stores -- "Fiber In the Diet" are representative of materials promoting bread and dietary fiber. A poster from Hinky Dinky supermarkets promotes the nutritional value of carbohydrates, including a wide variety of grain and wheat products. The Hinky Dinky campaign theme, "Good Food for Good Health", explains the various bodily functions dependent upon carbohydrates. Give-away cards distributed at the point of purchase by Bel Air supermarkets have featured various grain-based products such as whole wheat flour. Capitalizing on surging interest in wholewheat, new lines of wholewheat, wholemeal and bran breads have been introduced. Giant Foods recently conducted a "Foods for Health" promotional campaign in cooperation with the National Heart, Lung, and Blood Institute - National Institutes of Health. The effort attempted to encourage purchase of foods that could help minimize heart disease risks. Among the numerous educational materials were placards displayed at point of purchase which reminded shoppers of relative fat values

contained in products, including pastas and crackers. Numerous other examples could be cited. The point, however already is abundantly clear: a wide range of nutrition information campaigns, directly or indirectly promoting wheat foods (among others), already are underway in supermarkets across America.

Czechoslovakia reportedly has undertaken a wheat promotion program. Our research failed to turn up any particulars. Apparent human consumption of wheat tonnage in Czechoslovakia has been quite erratic throughout the 1971-1982 period (Exhibit 28). Eastern bloc nations often are not included in policy reviews. Current data from Eastern European nations is hard to come by. Language translation compounds the problem. Recent reviews of several consumer policy issues have shown that Eastern bloc countries, not infrequently, were among the early adopters. Apparently Czechoslovakia is an early adopter with respect to wheat promotion. More information is needed.

GRAIN PRODUCT CONSUMPTION TRENDS IN SWEDEN WARRANT SPECIAL ATTENTION

Wheat and rye flour consumption, basic grain staples in the Swedish diet, declined by more than 50% between the 1870's and 1978 (Exhibit 29). Sweden's Board for Health and Welfare, concerned by declining wheat consumption and the resulting adverse impact on nutrition well-being, recommended in 1969 that wheat foods consumption be increased by 25%. Efforts previously reviewed in this paper were undertaken during the 1970's to promote higher levels of consumption.

Since 1977, one year after the bread promotion campaign got underway, to 1979 bread consumption in the country increased by nearly 5% (Exhibits 30 & 31). Declining consumption of several other grain products during the late-1970's pose perplexing questions. On the one hand, consumption of pastry and sweets & pastries both declined during the late 1970's. Vigorous criticism levelled against such products by government educational materials pursuant to macro-nutrition recommendations may have had something to do with declining consumption. Perhaps the prolonged recession has forced cutbacks by consumers. Or, high inflation, declining value of the kroner, and income-elasticity of such "luxury" products may explain the downturn in consumption. On the other hand, a product praised and boosted by macro-nutrition recommendations - crispbread - declined by more than 10% during the late-1970's. This product is particularly high in nutrients and an excellent source of fiber. Furthermore, it is a traditional Swedish food staple. Nonetheless, consumption of crispbread declined sharply. These several trends appear to be contra-indicative. More recent data may provide some answers. In the meantime, the trends warrant close attention and some careful study.

LEARNING FROM THE EXPERIENCES OF OTHERS

In conclusion a few points are worth emphasizing.

There is good reason to promote increased consumption of grains, wheat and bread products. To accomplish this a long range program of education and information is indicated.

Preliminary analysis of the effectiveness wheat foods promotions and media campaigns have had upon consumption is somewhat uncertain, at least for several countries where efforts have been underway.

Experiences amassed by early adopters, particularly those in Western Europe, historically have provided, and continue to provide, a base of knowledge for avoiding mistakes and capitalizing on successes. The solutions of others may be our best solutions.

Food Law: International Leads & Lags

Diffusion Time: 1st Adopter & U.S.

- 19th Century: 20-50 Years
- 20th Century: 5-10 Years

Time Period:

Mid-19th Century

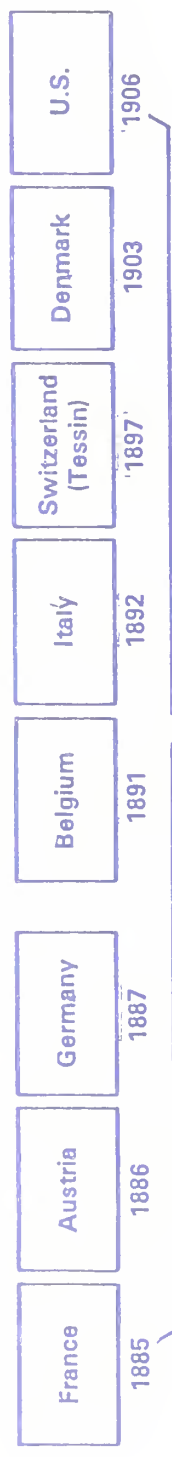
General Pure Food Law



46 Years

Late-19th Century

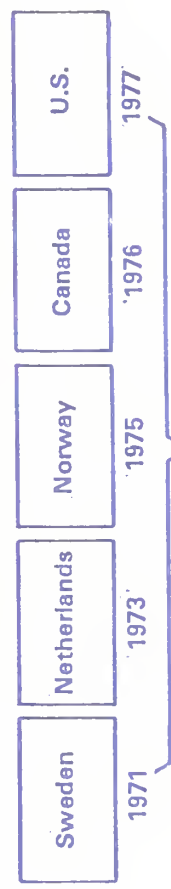
Food Color Controls



21 Years

Late-20th Century

National (Macro-) Nutrition Goals



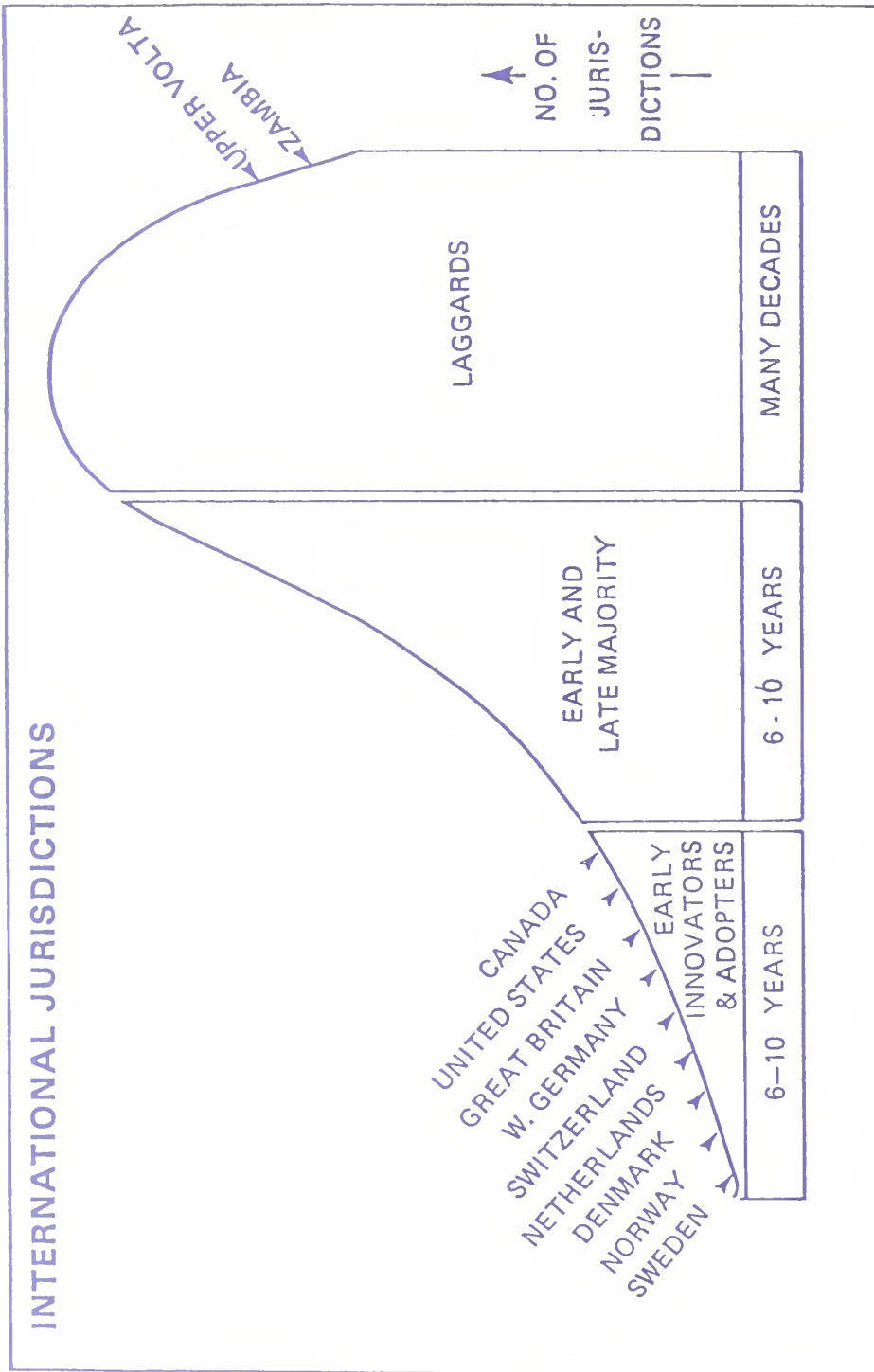
6 Years

INTERNATIONAL DIFFUSION OF PUBLIC POLICY

Leads & Lags: Early or 1st Adopters and US

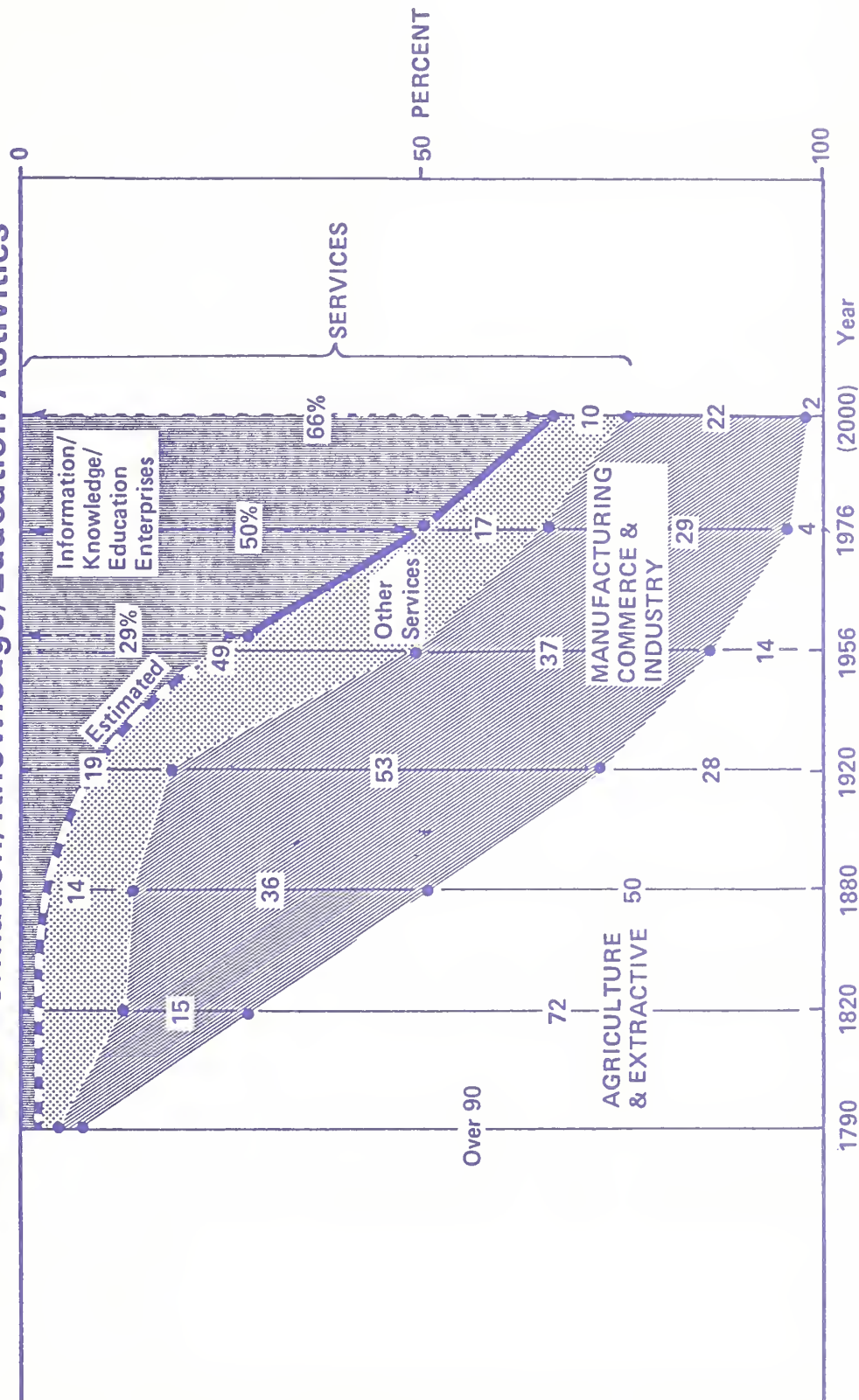


PATTERNS OF CHANGE



© 1979, PUBLIC POLICY FORECASTING, INC. -- BY GRAHAM T.T. MOLITOR

POST-INDUSTRIAL SOCIETY WORKFORCE DISTRIBUTION: **Dominance of Information/Knowledge/Education Activities**



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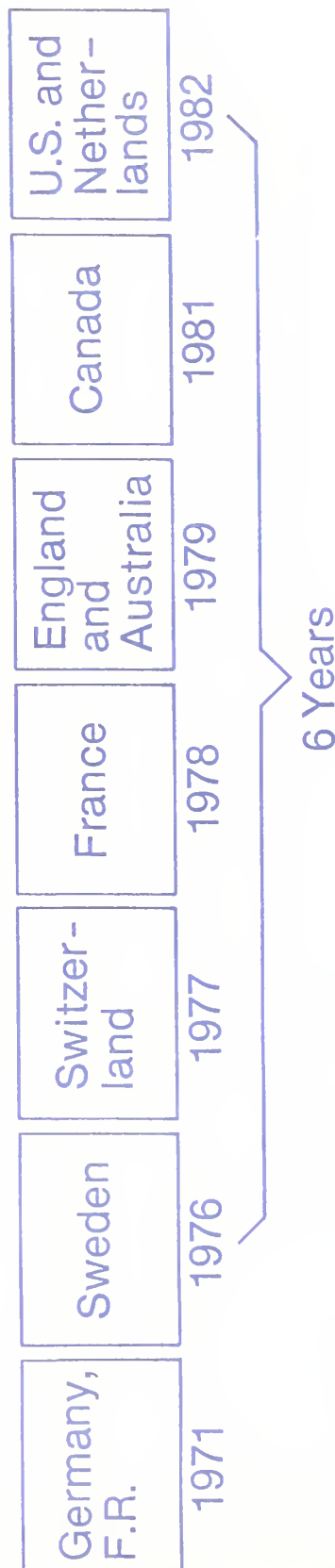
National Macro-Nutrition Goals and Wheat Promotion International Diffusion

National Macro-Nutrition Goals



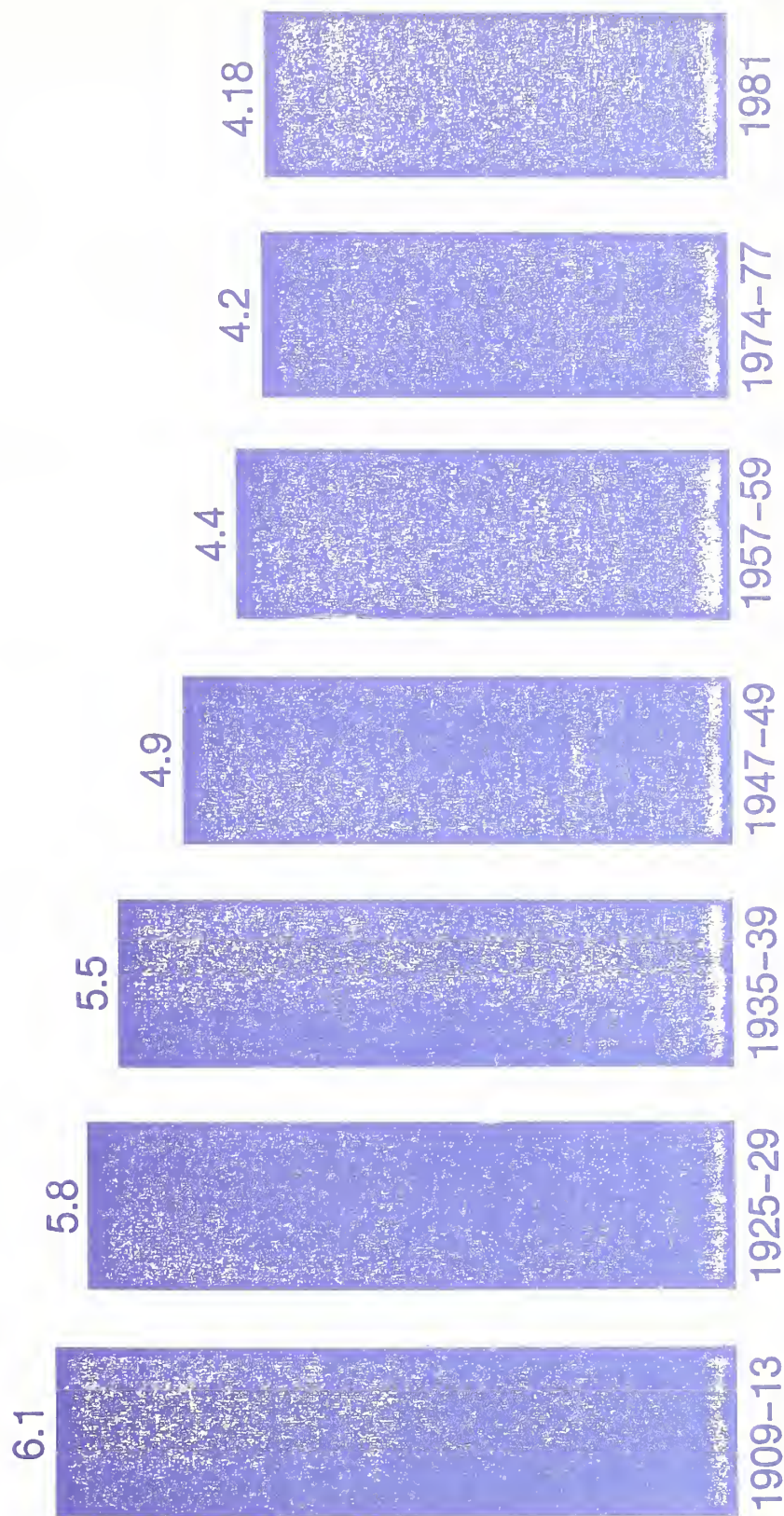
382

Wheat Products Promotion Campaigns



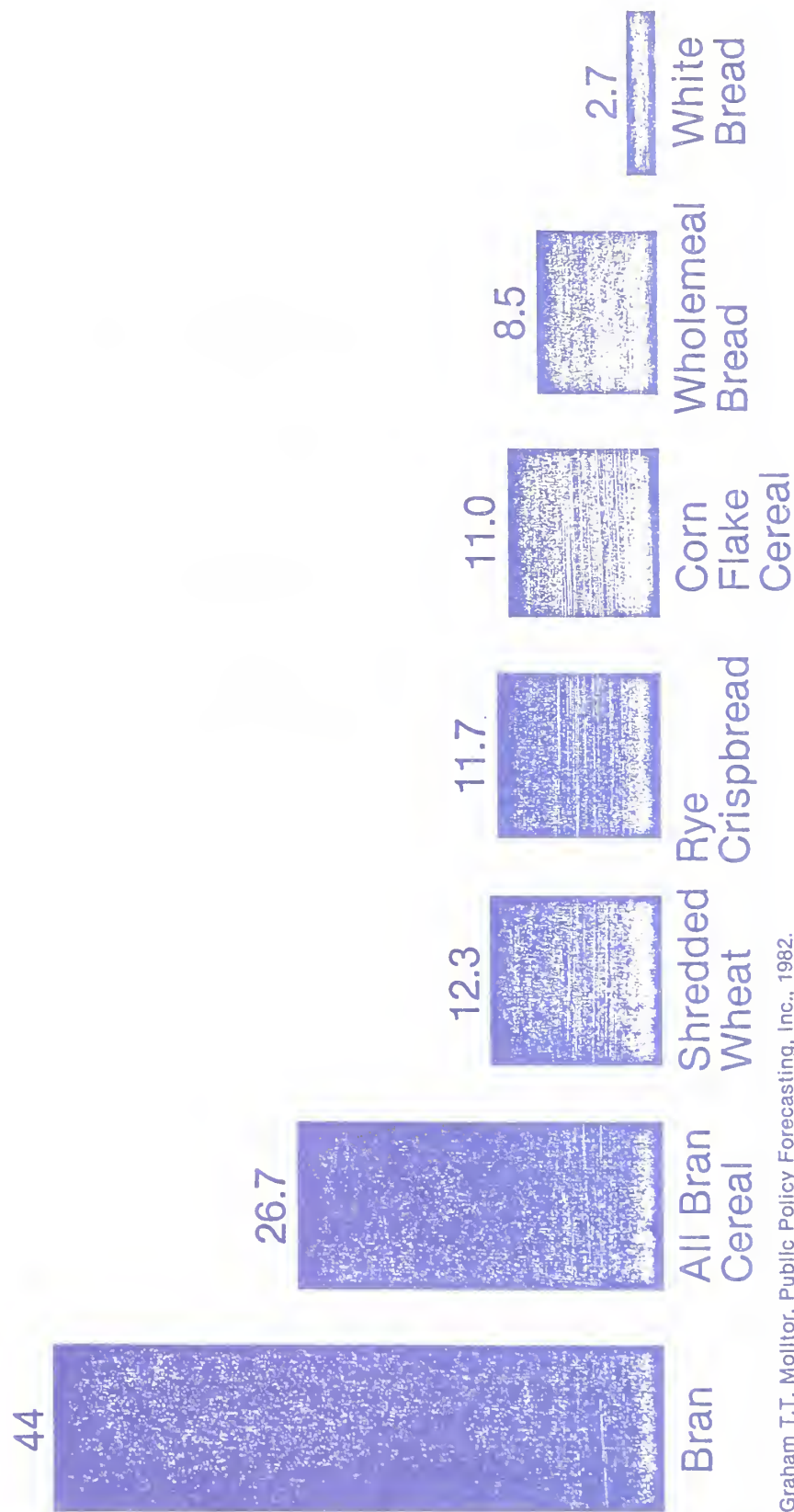
Crude Fiber

Daily Grams Available Per Capita, U.S.



Graham T.T. Mollitor, Public Policy Forecasting, Inc., 1982. Based on USDA data (Marsten, Friend and Paige).

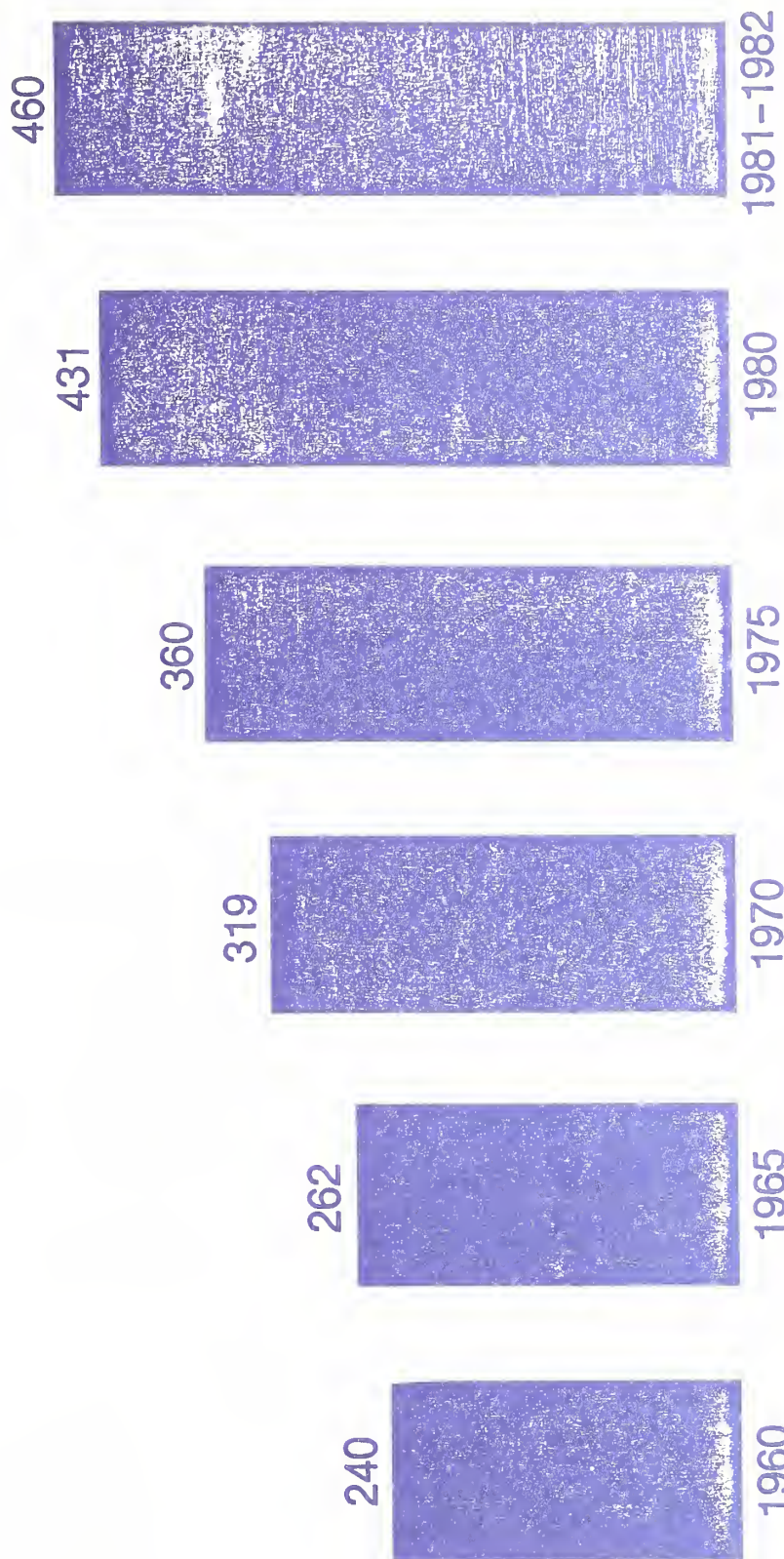
Dietary Fiber, Selected Foods (g. per 100 g. as consumed)



Graham T.T. Molltor, Public Policy Forecasting, Inc., 1982.

Wheat Production Worldwide

(Million Metric Tons)



Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on CIA, OECD data.

Grain Consumption, Direct and Indirect -Annual Pounds Per Capita-

1819 U.S.
1462 U.S.S.R.
1382 E. Europe
687 World Avg.
590 Japan
307 African LDC's

1969-1971

1755 U.S.S.R.
1670 E. Europe
1649 U.S.
692 World Avg.
605 Japan
282 African LDC's

1973-1975

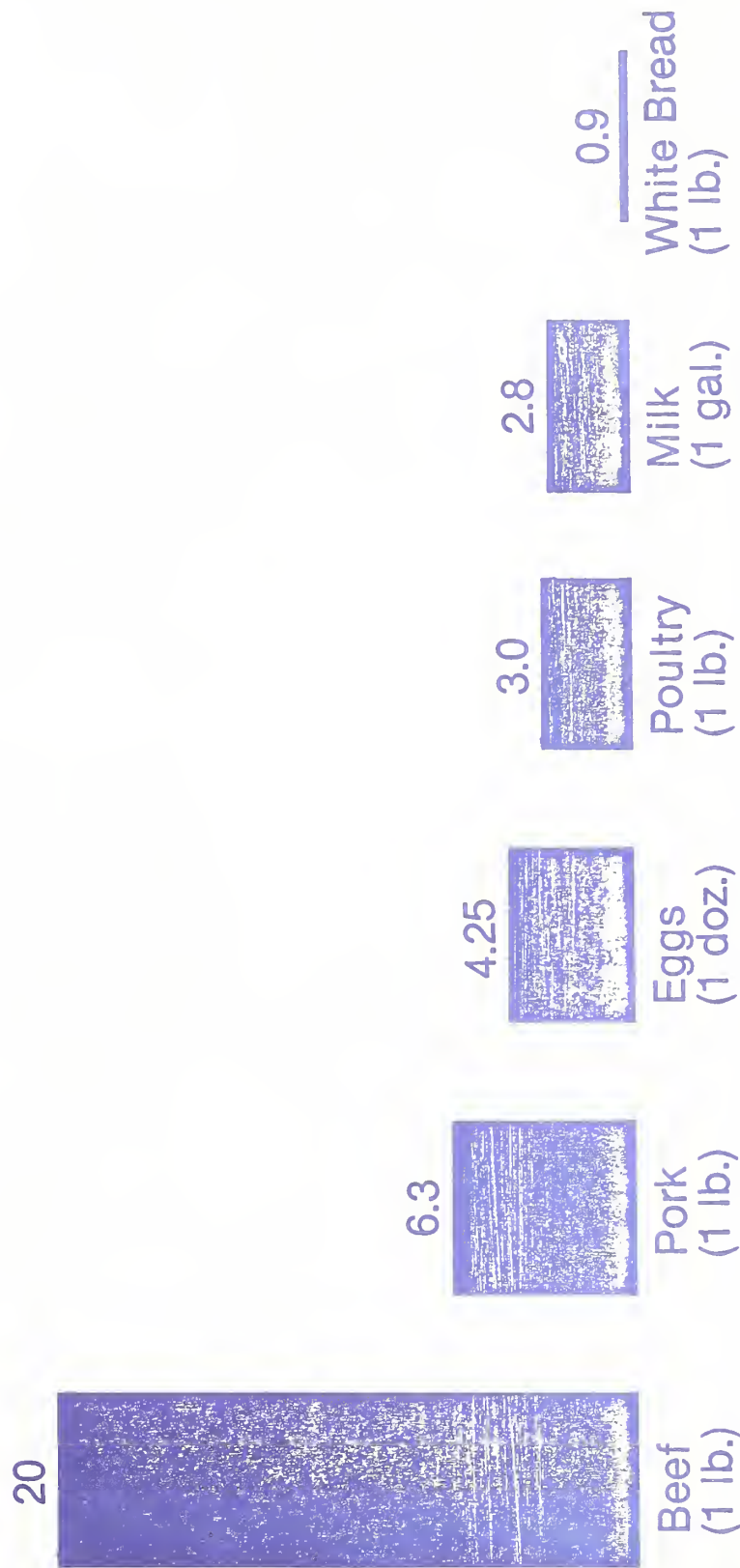
2451 U.S.
2200 E. Europe
2095 U.S.S.R.
997 Japan
757 World Avg.
247 African LDC's

2000

Graham T.T. Molitor, Public Policy Forecasting, inc., 1982. Based on The Global 2000 Report to the President, 1980. Vol. I, pp. 20-21.

Grain Conversion Ratios

Pounds of Grain Required to Produce Some Foods

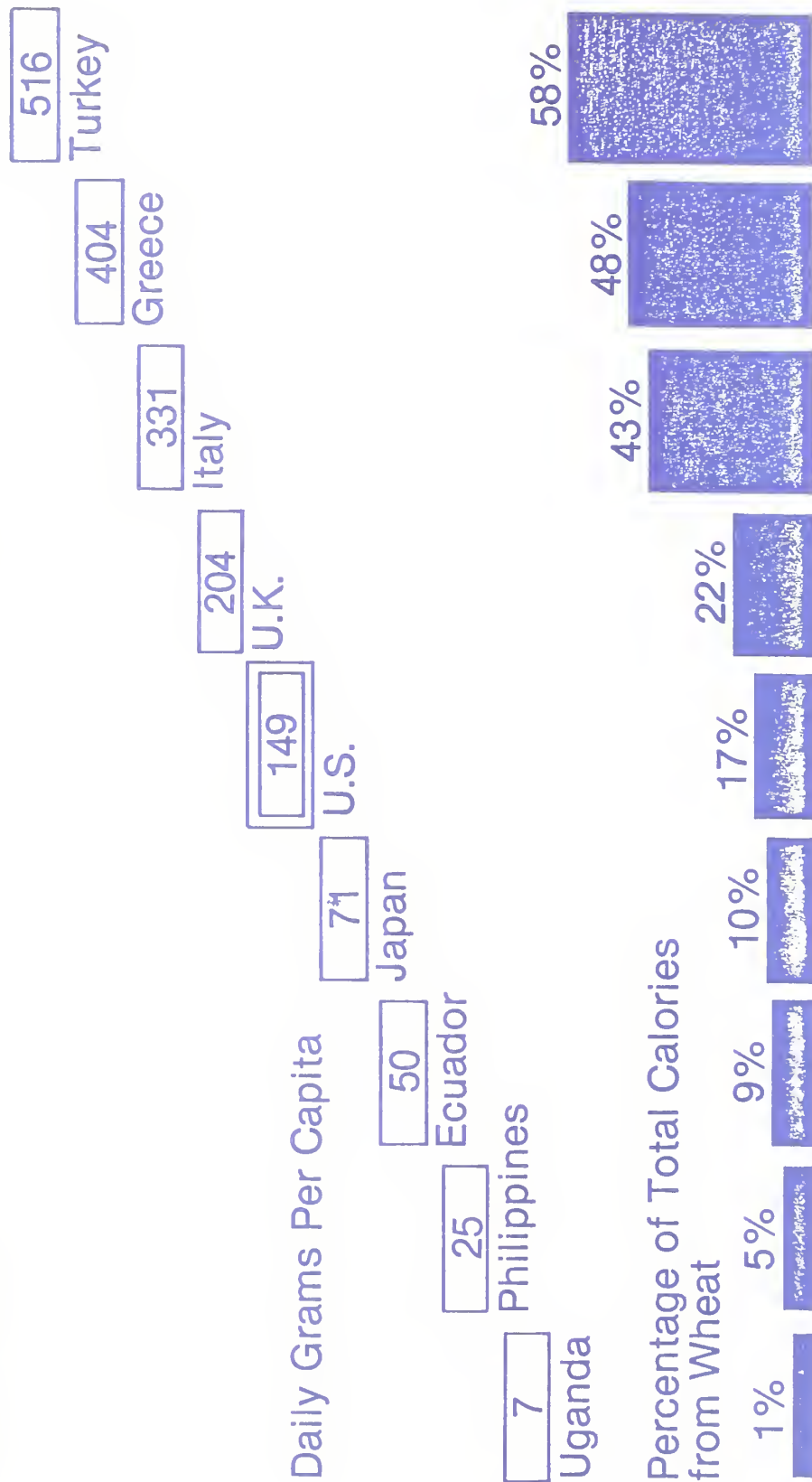


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982.

Wheat Consumption

Highest to Lowest Consumption, Select Nations

(1960-62 Average)



Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on UN/FAO data.

Total Grain Consumption (As Flour)

Annual Pounds Per Capita, 1978-79

509
Turkey

344
U.S.S.R.

260
Greece

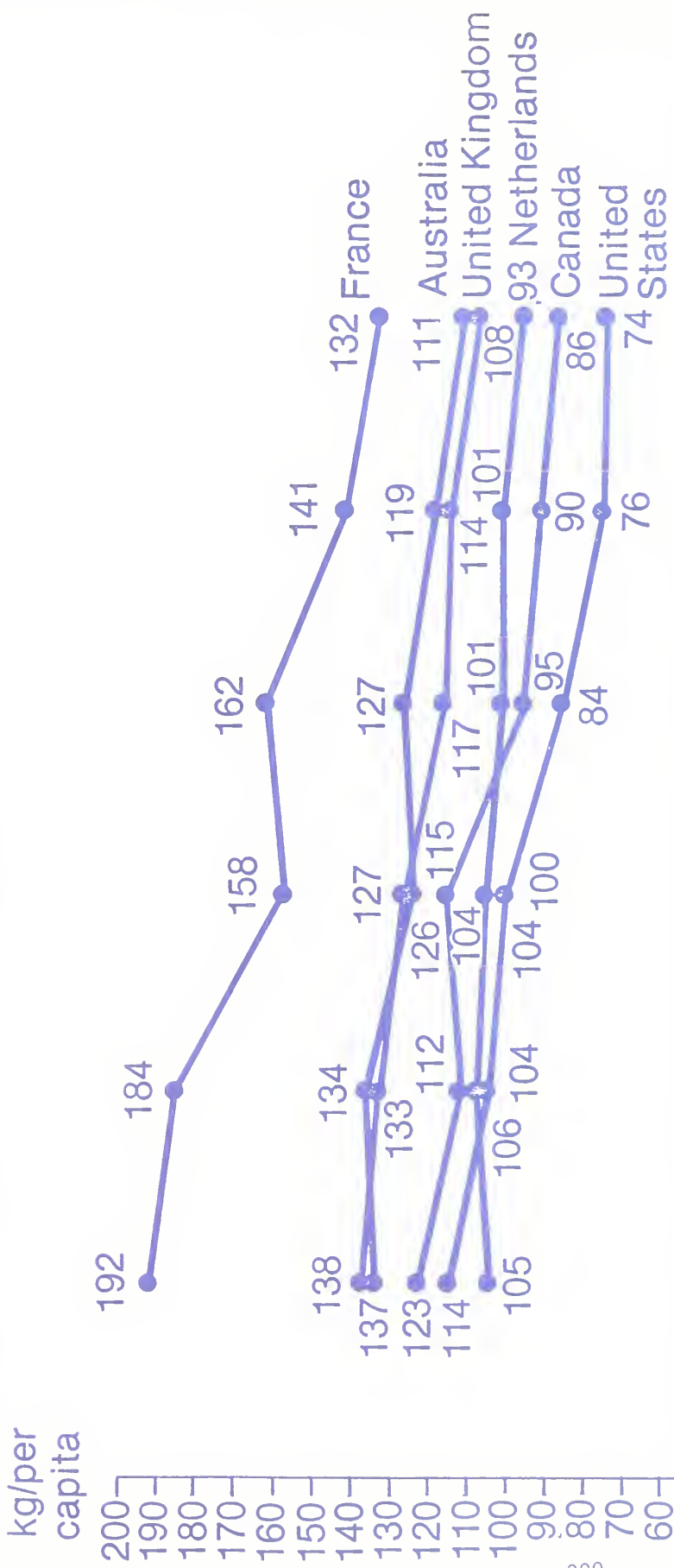
243
Portugal

168 Switzerland
165 France
157 U.K.
152 Germany, F.R.
148 Canada
135 Netherlands
132 U.S.
130 Sweden

77
Japan

Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on Eurostat, 1981, p. 169.

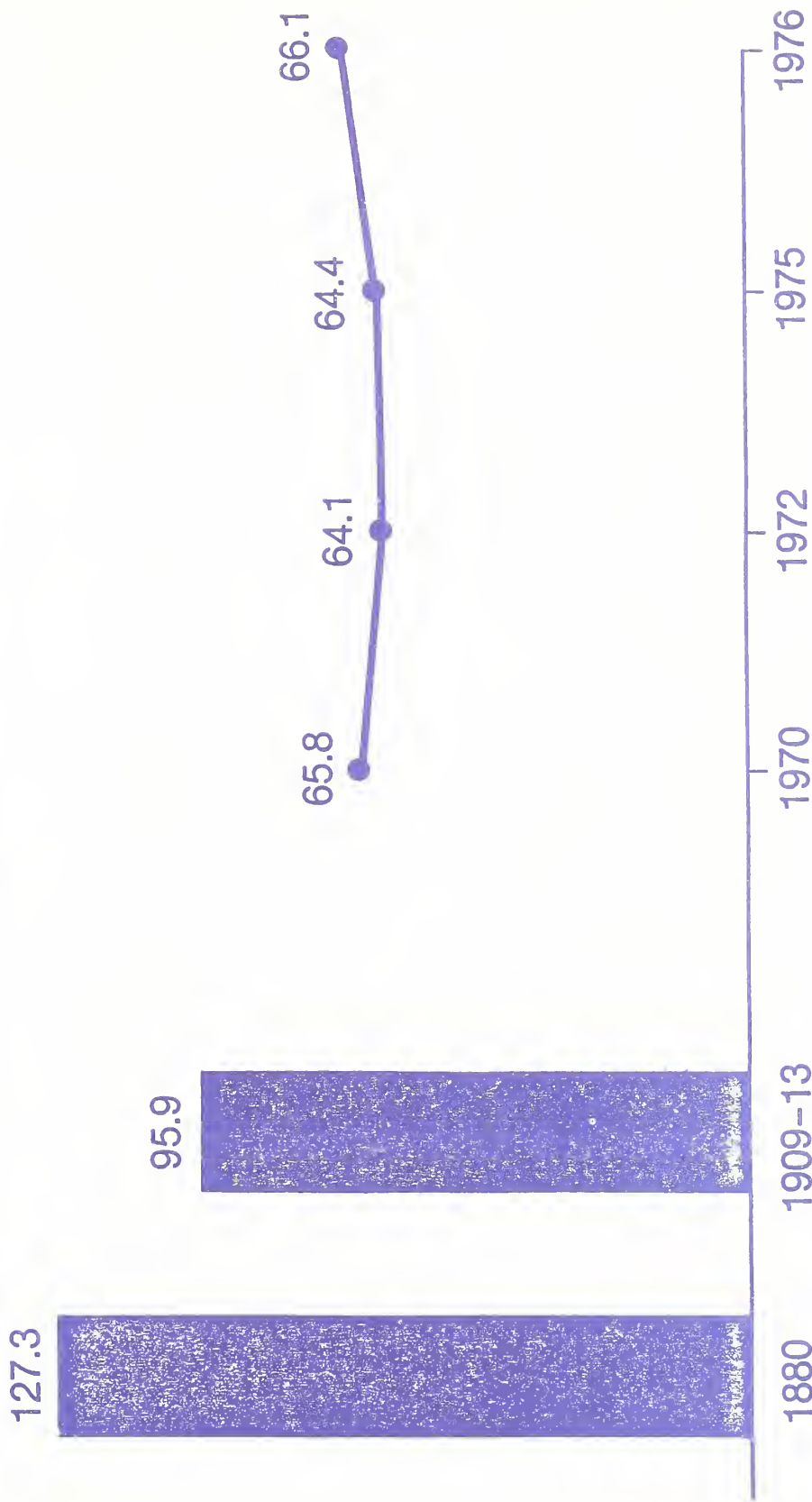
Wheat Consumption: Select Nations Yearly Kilograms Per Capita



Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on UN/FAO, Wheat in Human Nutrition, 1970.

Wheat Flour Consumption: U.K.

Yearly Kilograms Per Capita

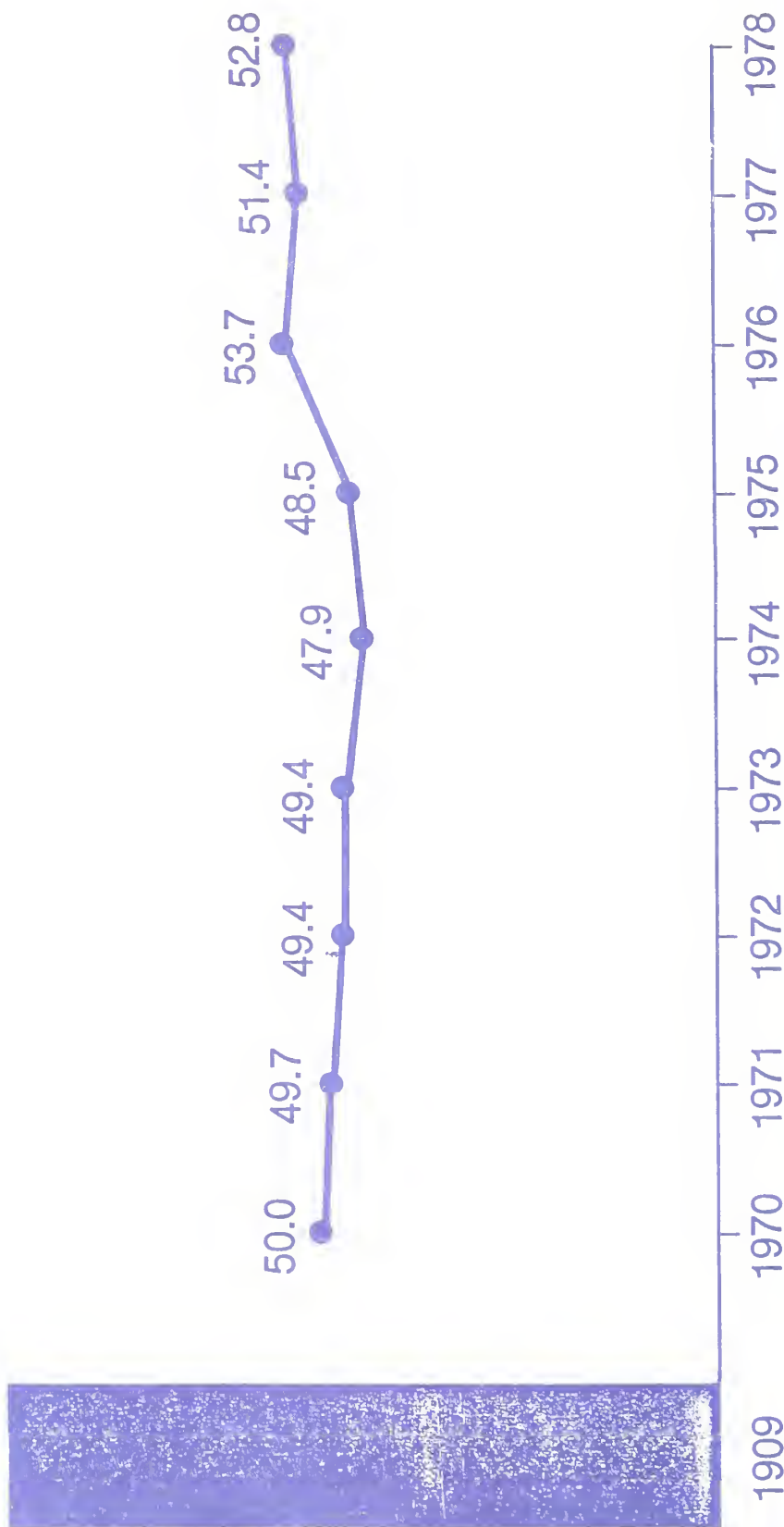


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on Ministry of Agriculture, Fisheries and Food data, and selected journals.

Wheat Flour Consumption: U.S.

Yearly Kilograms Per Capita

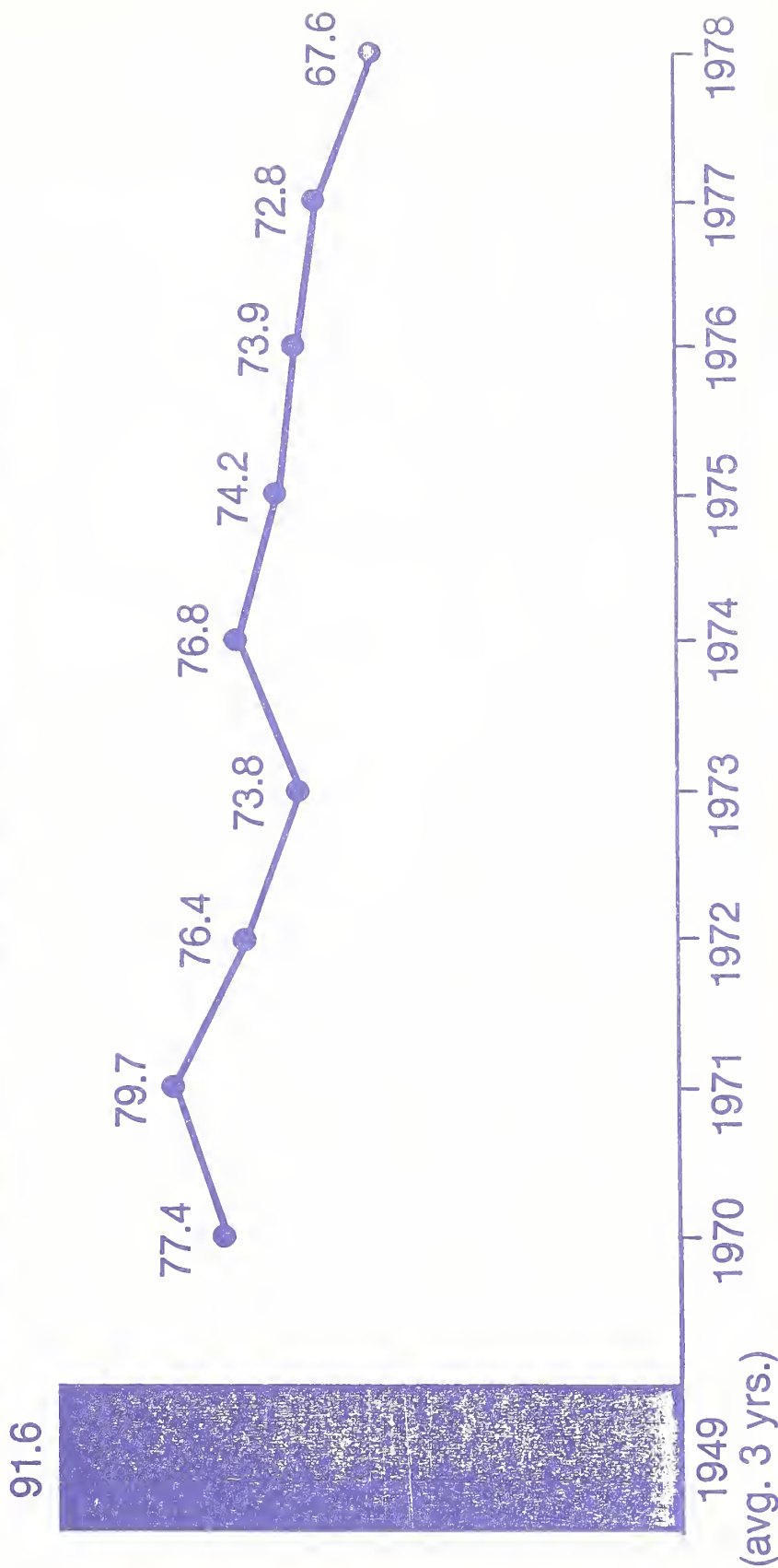
98.6



Graham T.T. Mollitor, Public Policy Forecasting, Inc., 1982. Based on USDA data.

Wheat Flour* Apparent Consumption: Australia

Yearly Kilograms Per Capita (*Including Starch)

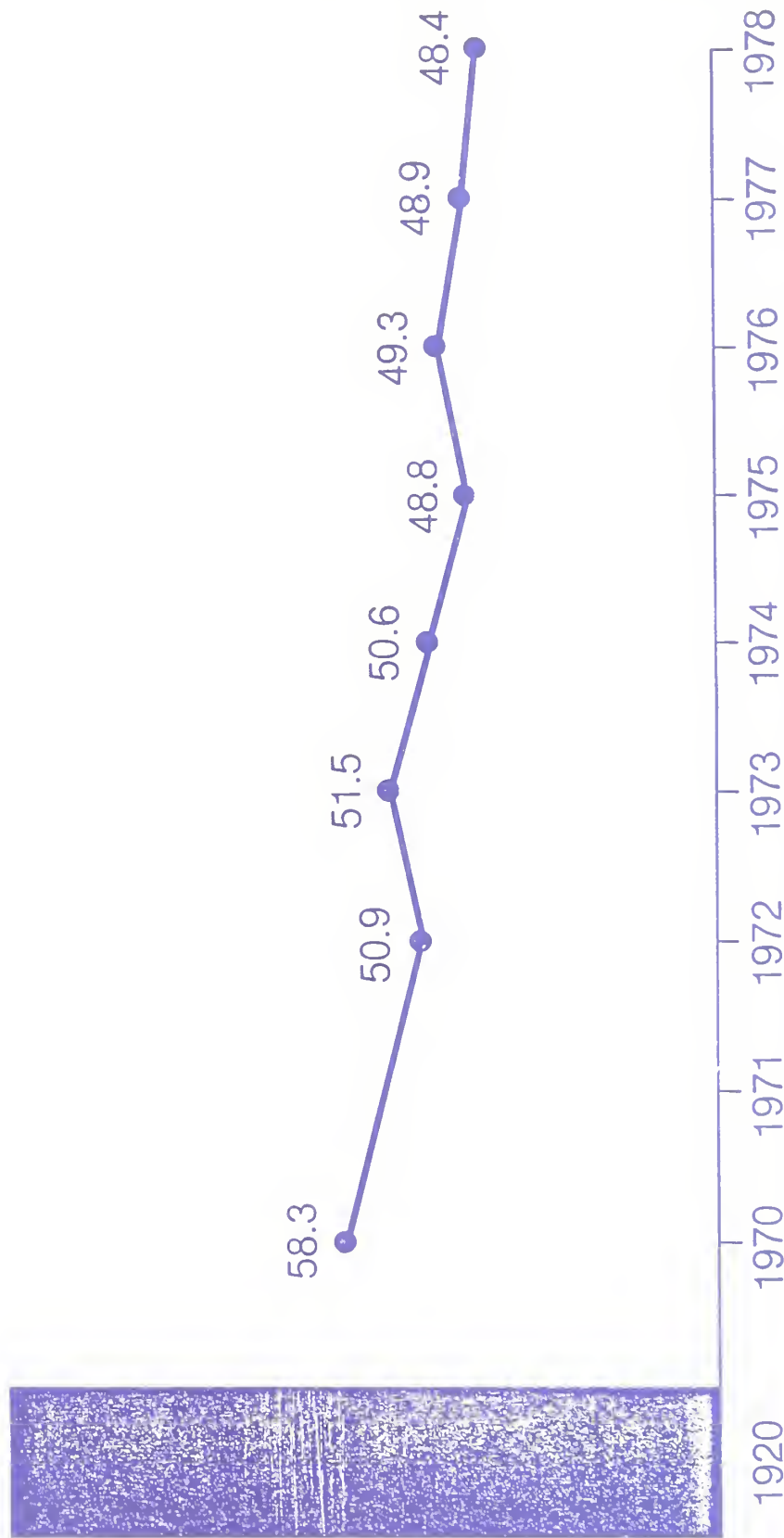


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on Australian Bureau of Statistics data.

Bread Consumption: Australia

Yearly Kilograms Per Capita

96.0

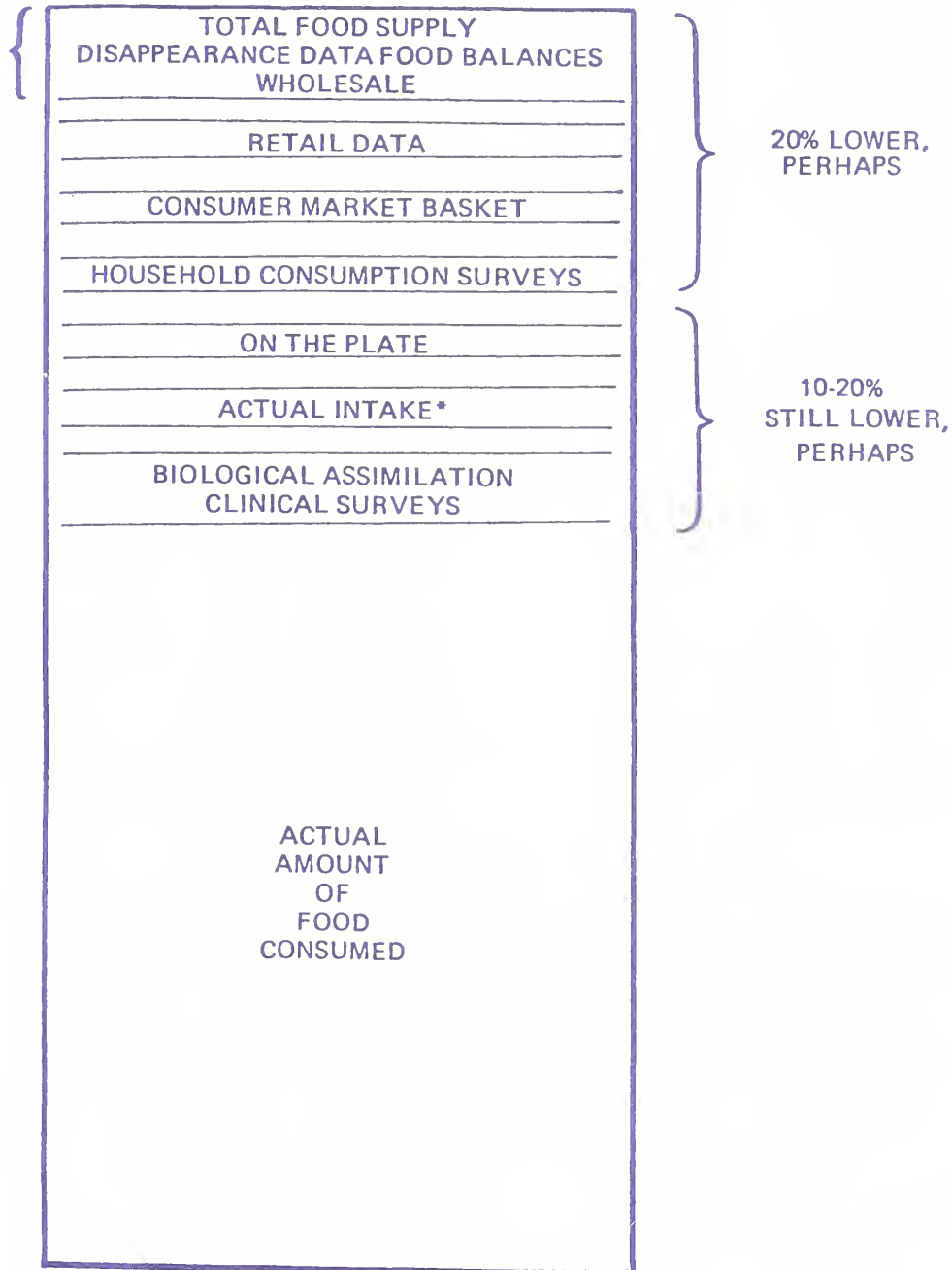


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on Australian Bureau of Statistics data.

HOW MUCH FOOD DO HUMANS ACTUALLY CONSUME?

VARYING MEASUREMENTS OF FOOD CONSUMED

10%
MAXIMUM
STATISTICAL
ERROR

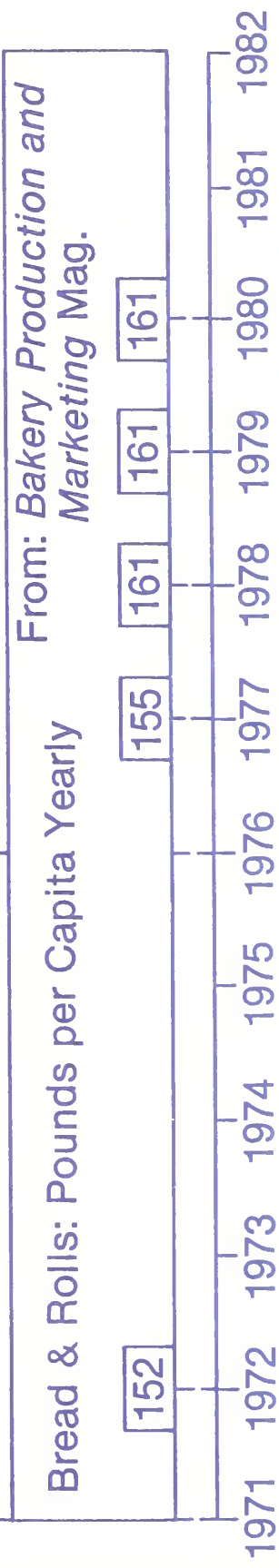
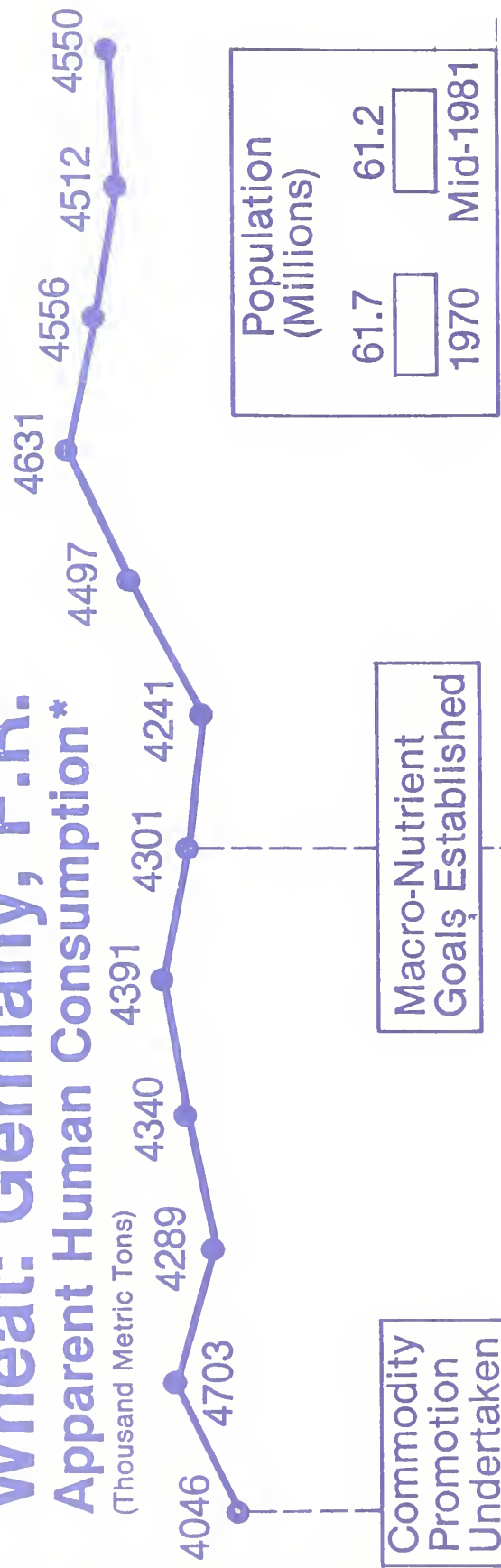


- * Estimate of the disparity between disappearance data and actual human consumption: 25-30%, or even 40% lower according to HANES survey

Jacobsen and Brewster, *The Changing American Diet*, p.8.

Wheat: Germany, F.R. Apparent Human Consumption*

(Thousand Metric Tons)

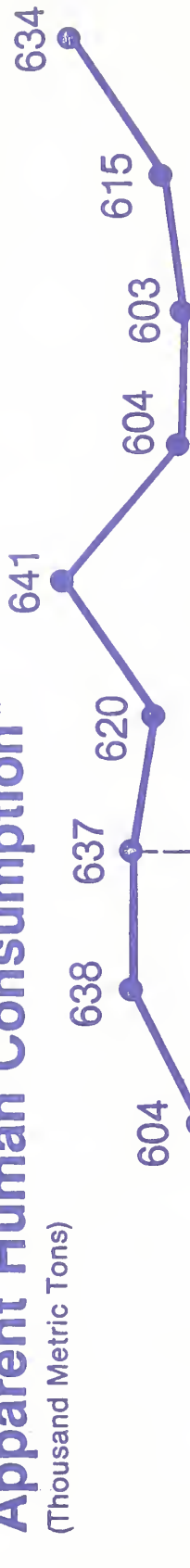


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
*Consumption totals include minor additions for seed and wastage.

Wheat: Sweden

Apparent Human Consumption*

(Thousand Metric Tons)



Macro-Nutrient Goals Established

Commodity Promotion Undertaken

Population (Millions)

8.0

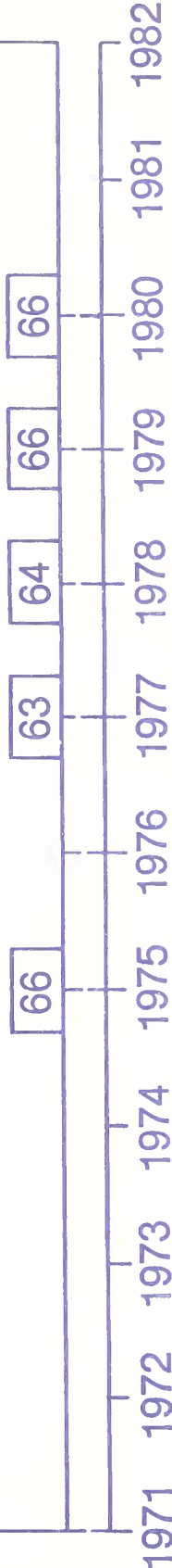
1970

8.3

Mid-1981

Bread & Rolls: Pounds per Capita Yearly

From: Bakery Production and Marketing Mag.



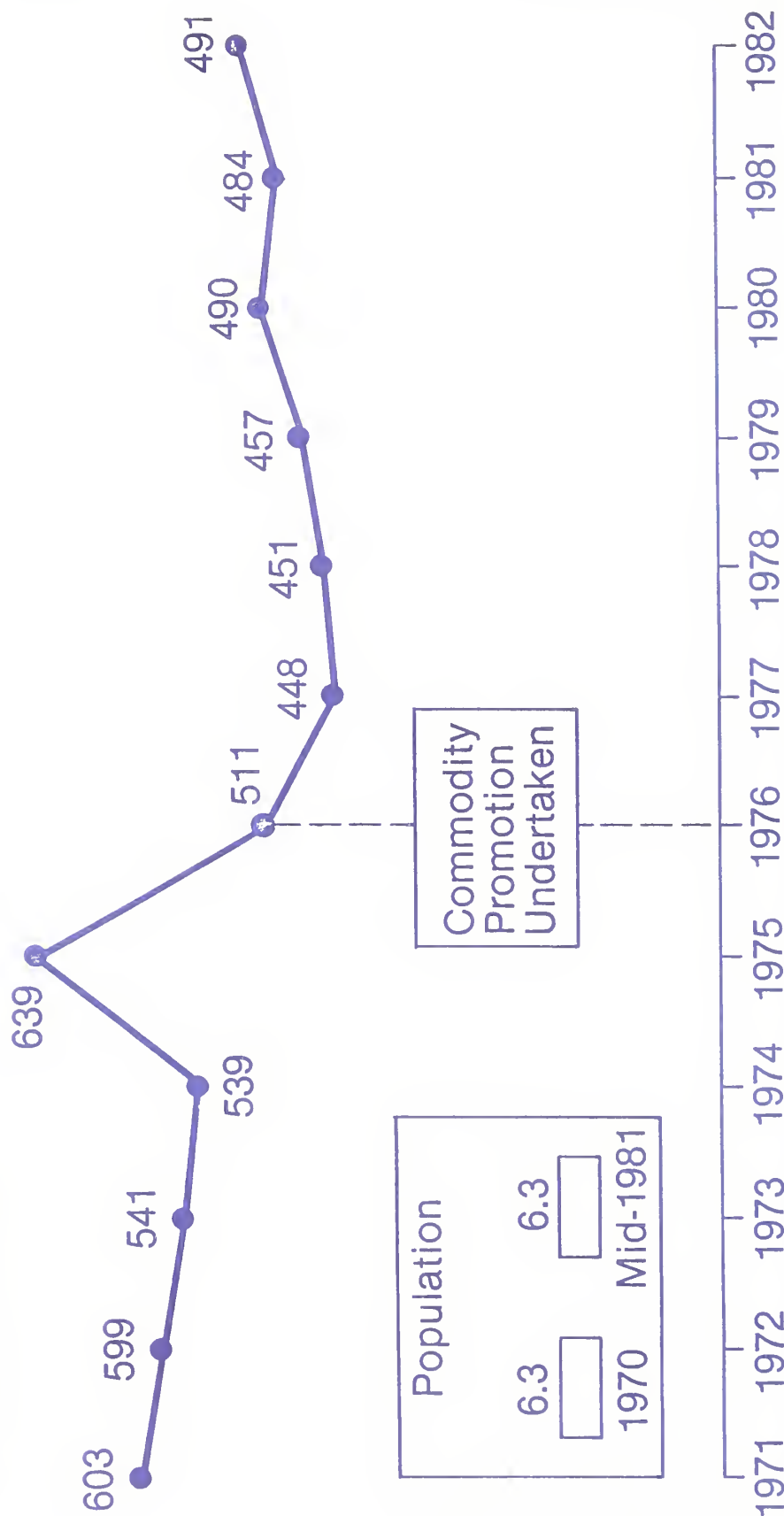
Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.

*Consumption totals include minor additions for seed and wastage.

Wheat: Switzerland

Apparent Human Consumption*

(Thousand Metric Tons)

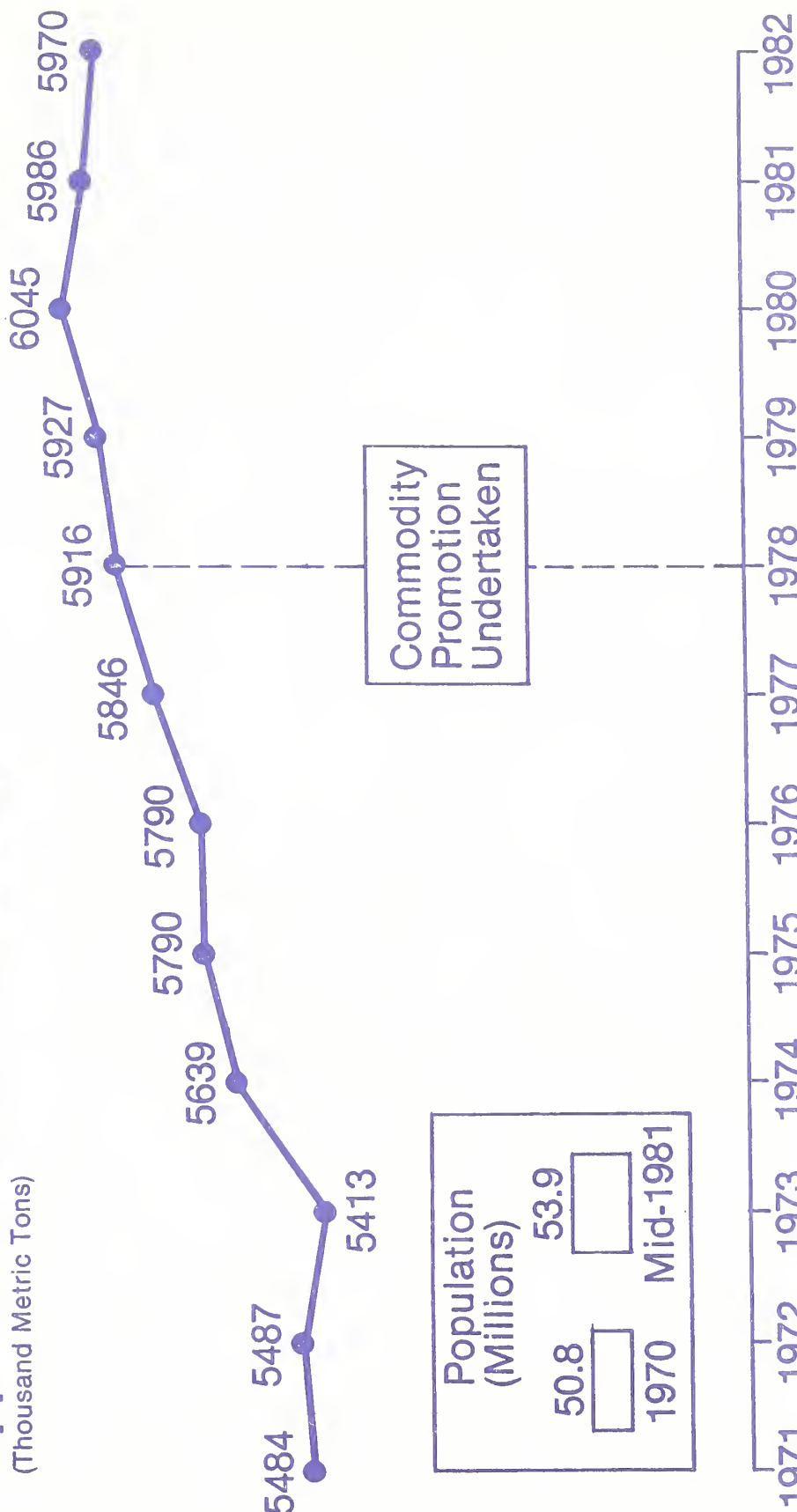


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
 *Consumption totals include minor additions for seed and wastage.

Wheat: France

Apparent Human Consumption*

(Thousand Metric Tons)



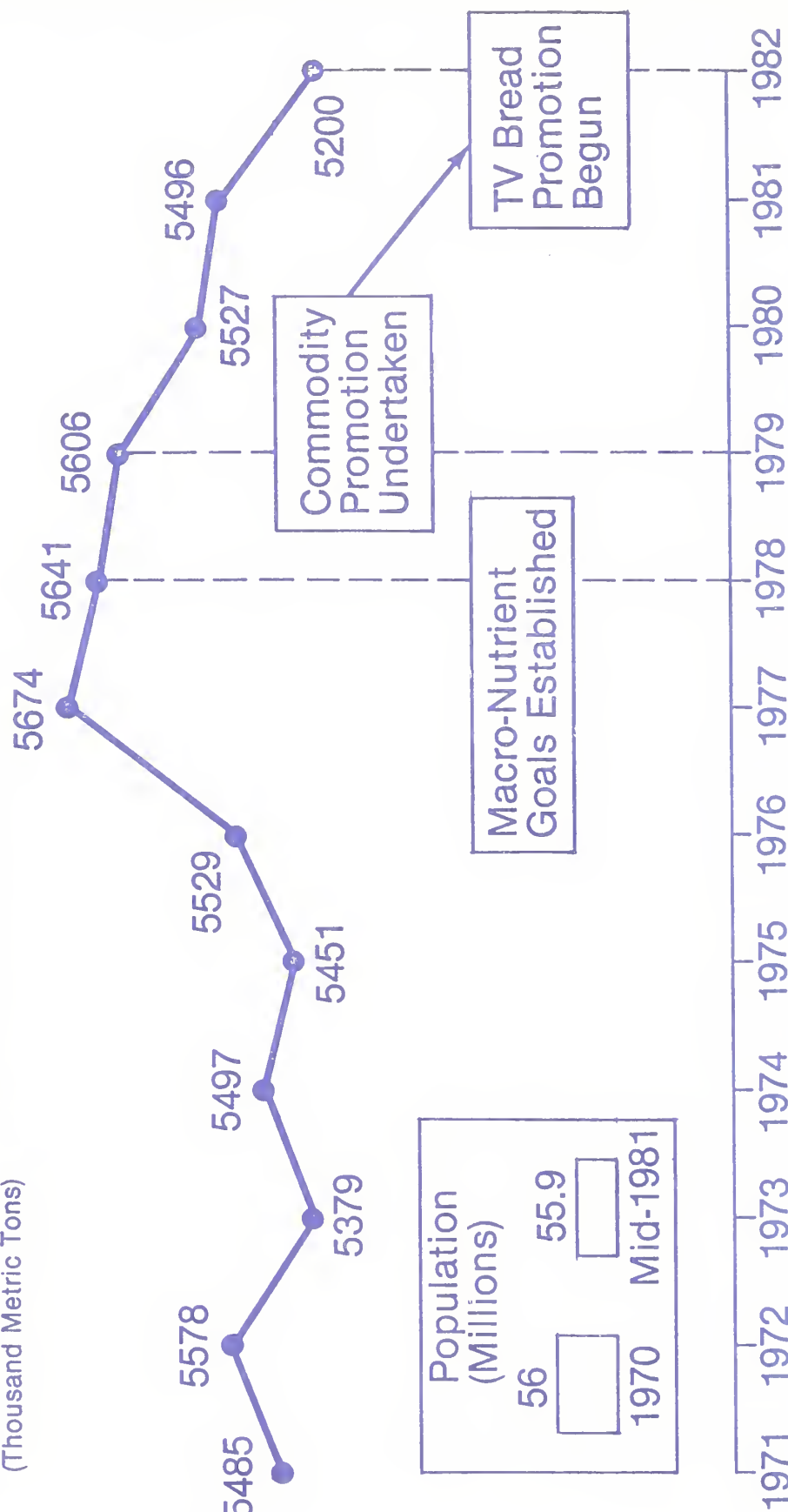
Population (Millions)	
50.8	1970
53.9	Mid-1981

Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
*Consumption totals include minor additions for seed and wastage.

Wheat: United Kingdom

Apparent Human Consumption*

(Thousand Metric Tons)

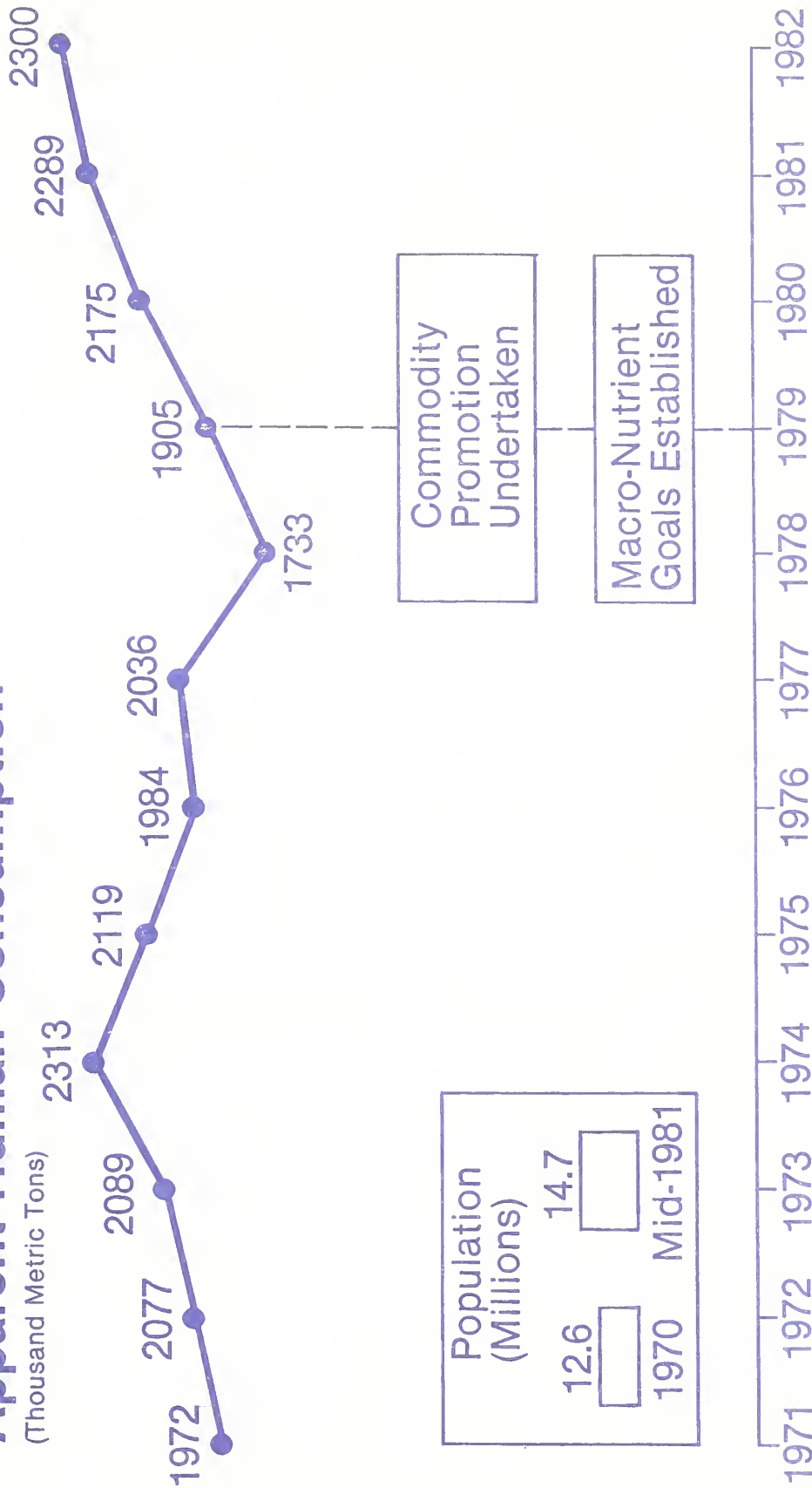


Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
 *Consumption totals include minor additions for seed and wastage.

Wheat: Australia

Apparent Human Consumption*

(Thousand Metric Tons)



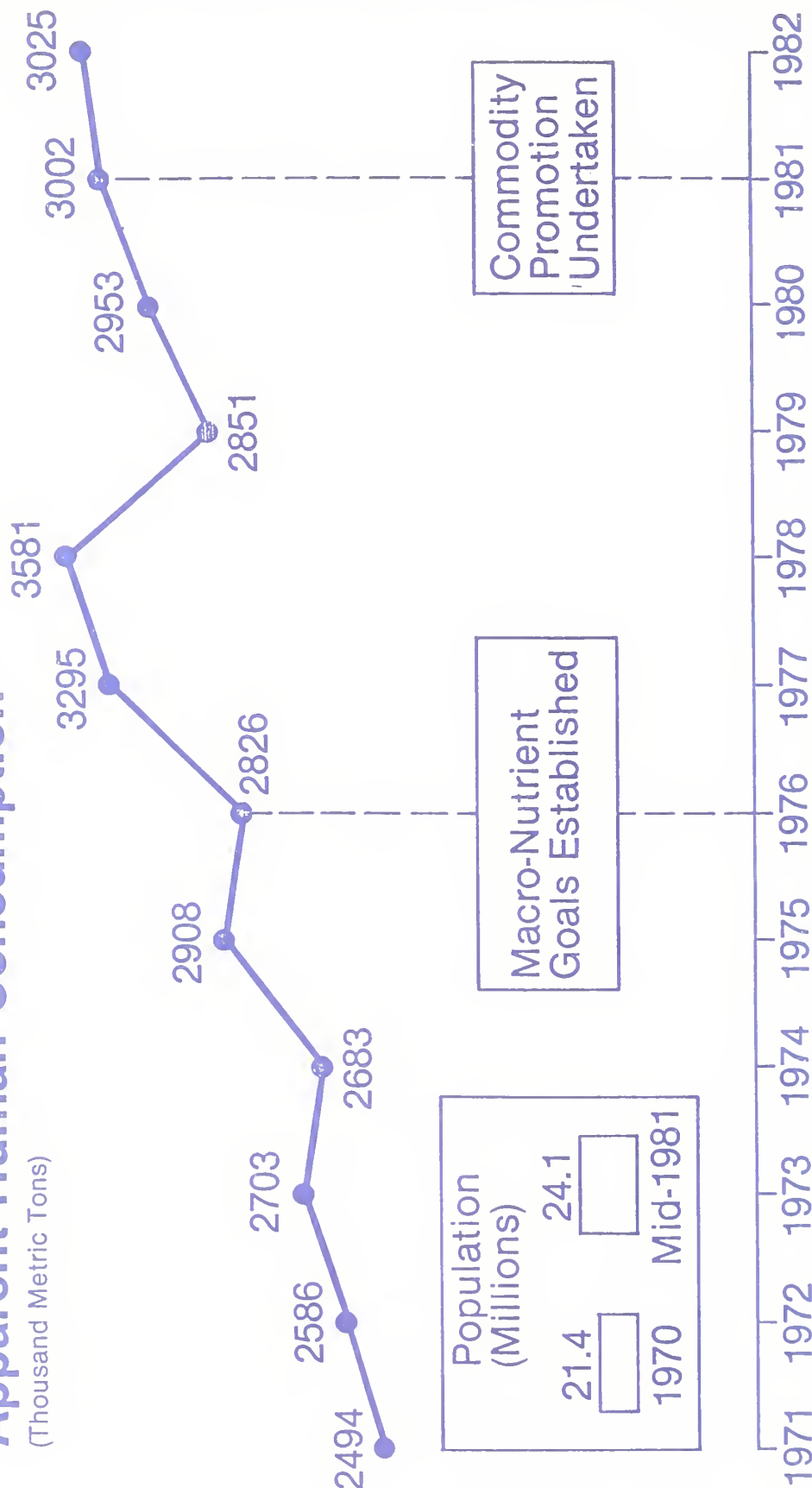
Population (Millions)	
12.6	1970
14.7	Mid-1981

Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
*Consumption totals include minor additions for seed and wastage.

Wheat: Canada

Apparent Human Consumption*

(Thousand Metric Tons)



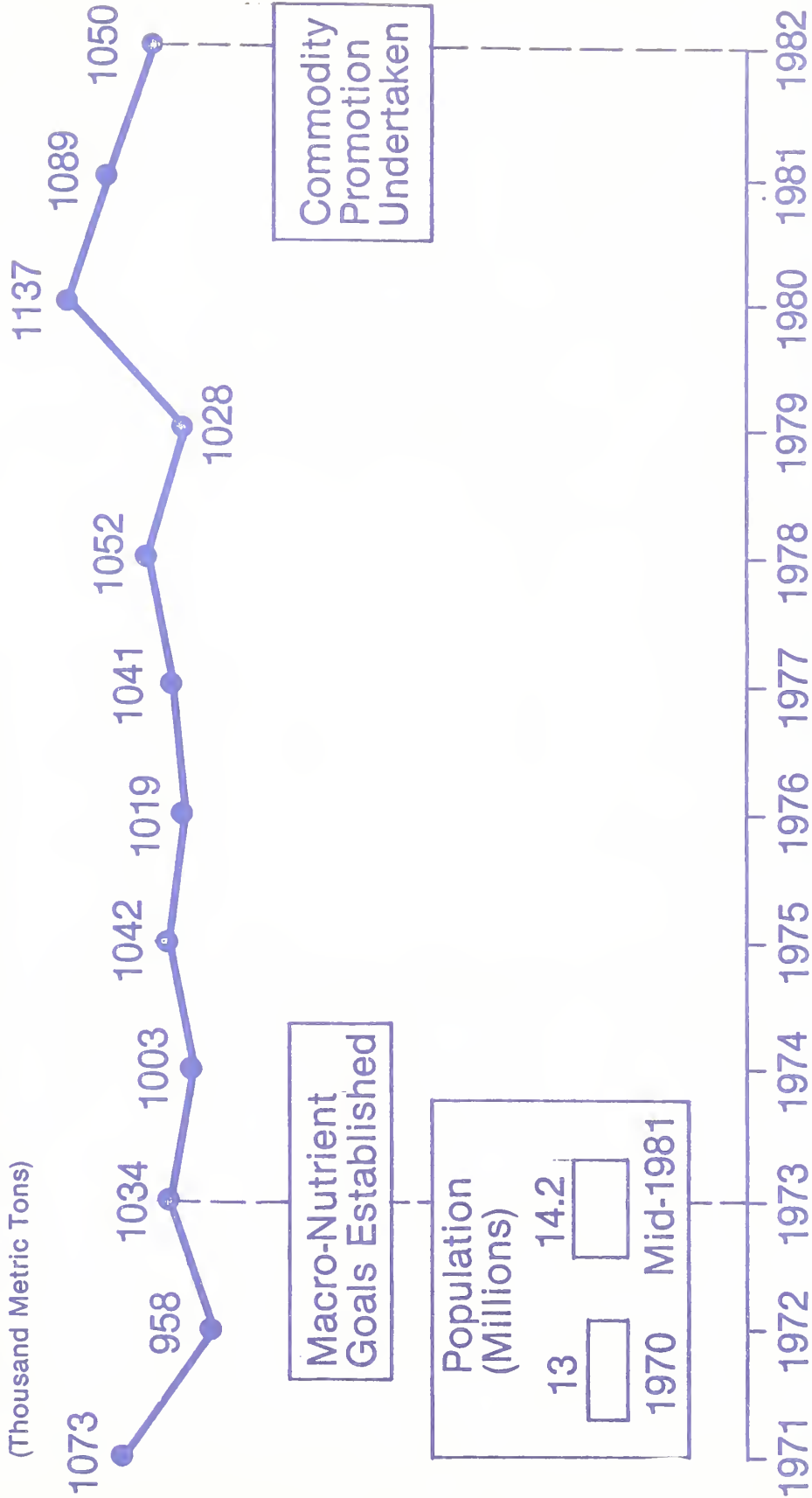
Population (Millions)	
21.4	1970
24.1	Mid-1981

Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
 *Consumption totals include minor additions for seed and wastage.

Wheat: Netherlands

Apparent Human Consumption*

(Thousand Metric Tons)



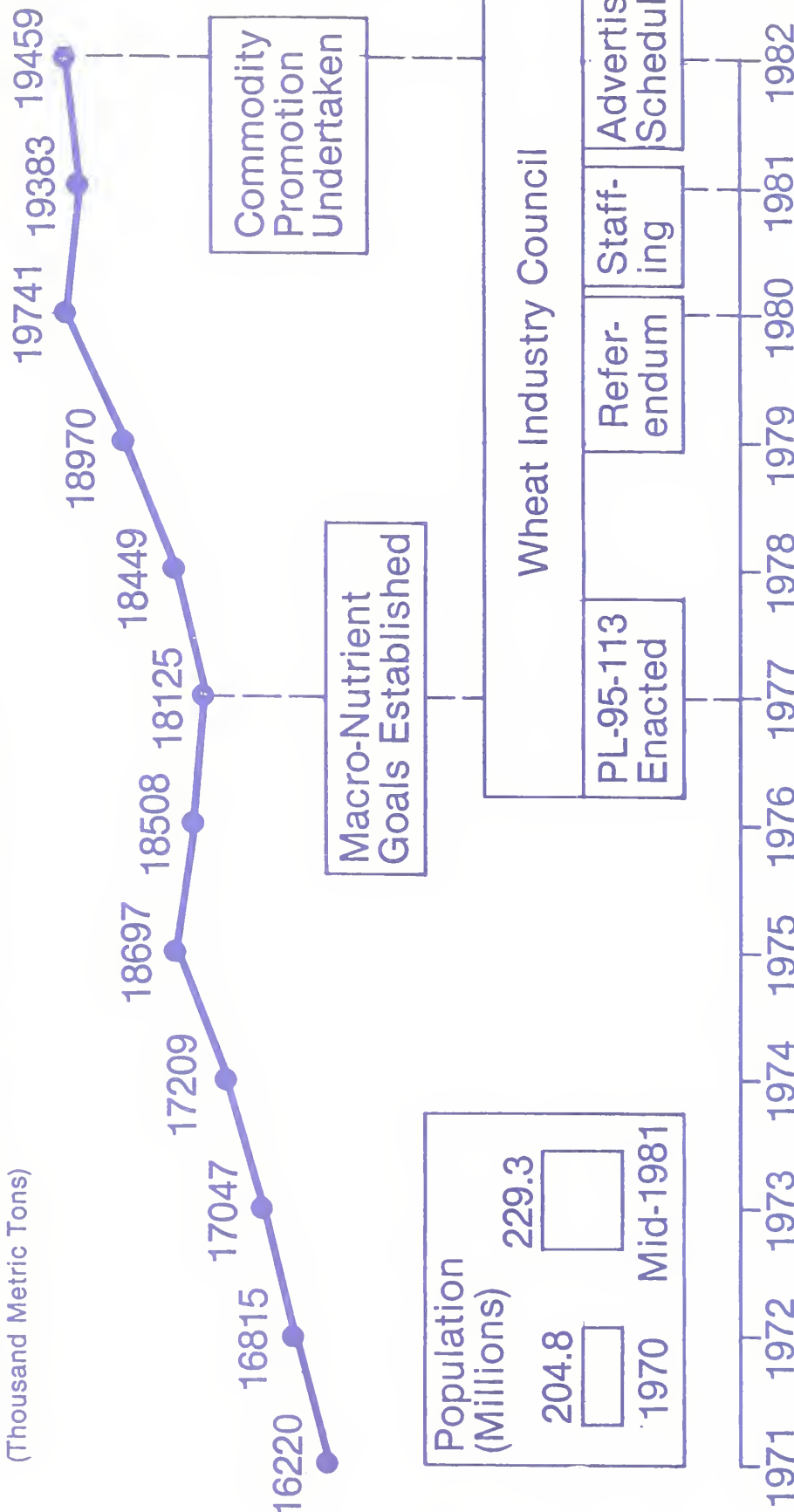
Population (Millions)	
13	14.2
1970	Mid-1981

Graham T.T. Mollitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
 *Consumption totals include minor additions for seed and wastage.

Wheat: United States

Apparent Human Consumption*

(Thousand Metric Tons)



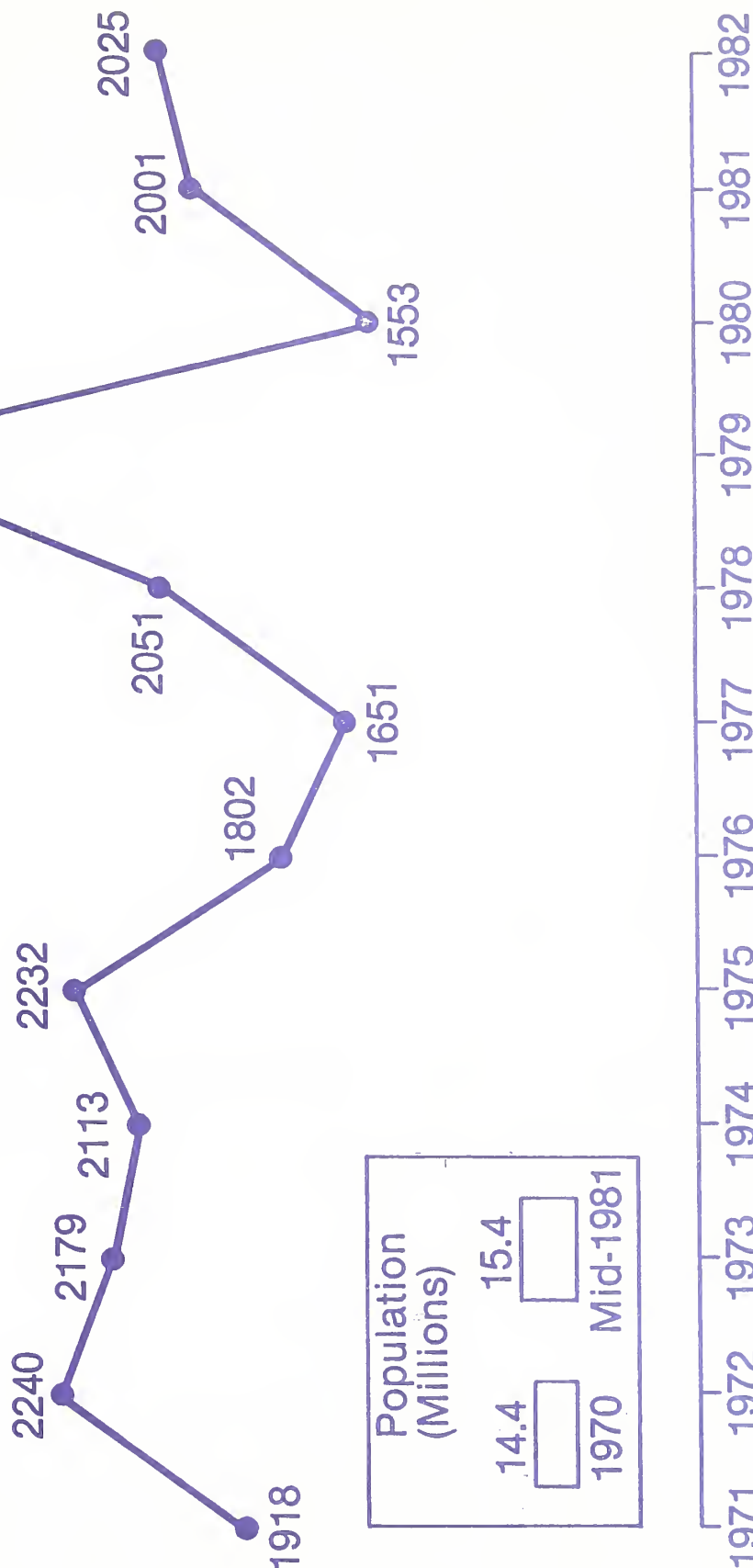
Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.

*Consumption totals include minor additions for seed and wastage.

Wheat: Czechoslovakia

Apparent Human Consumption*

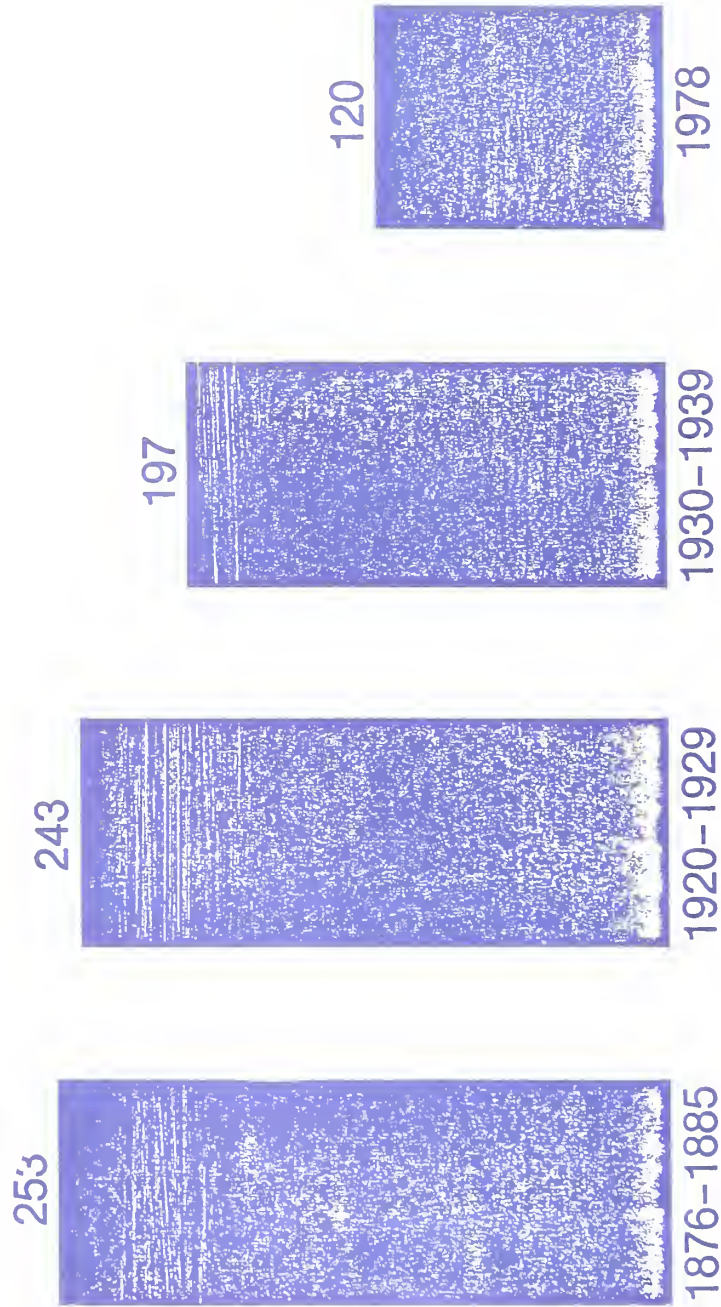
(Thousand Metric Tons)



Population (Millions)	
14.4	1970
15.4	Mid-1981

Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on USDA/FAS, Bureau of Census data.
*Consumption totals include minor additions for seed and wastage.

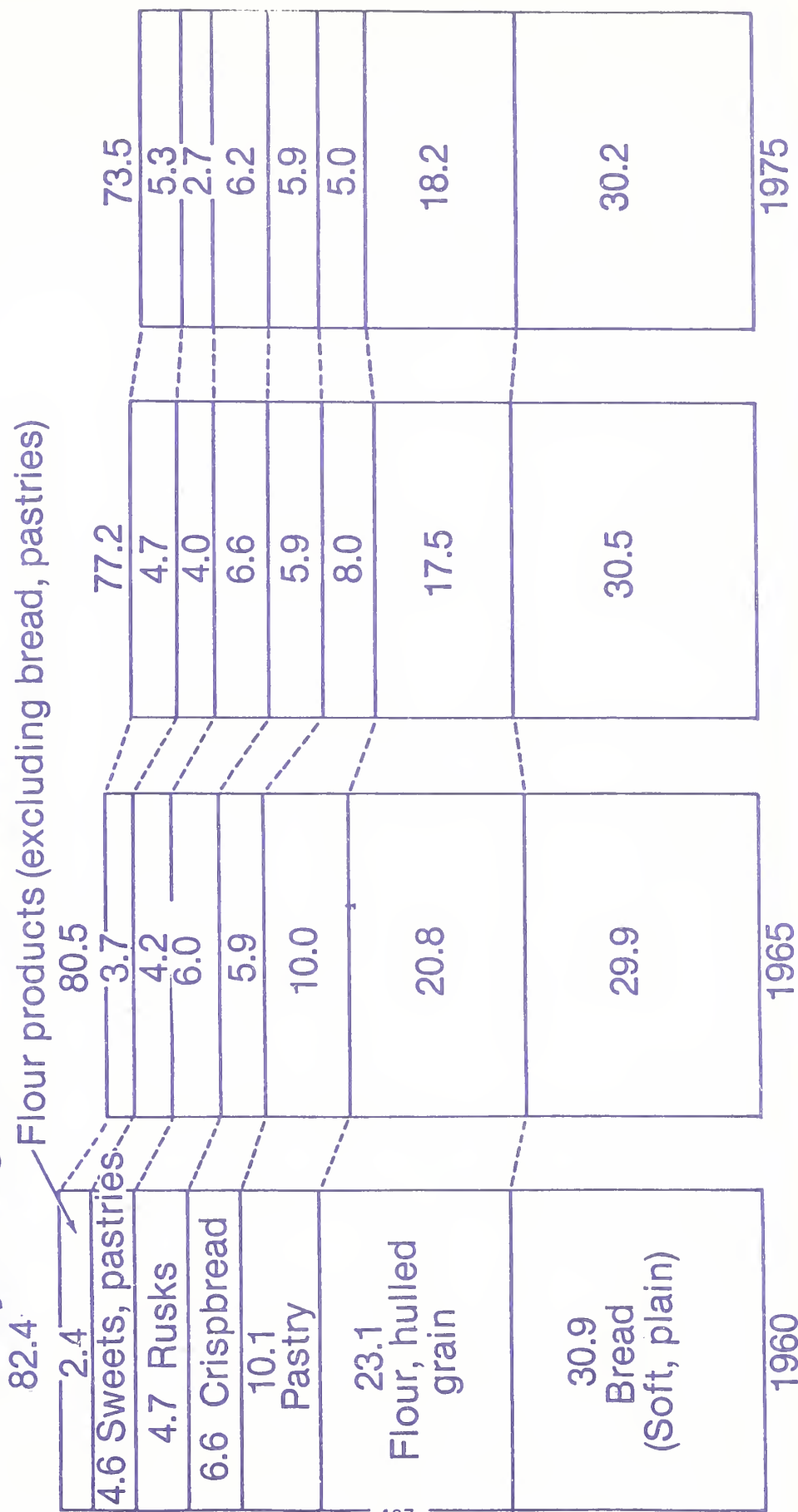
Wheat and Rye Flour Consumption: Sweden Pounds Yearly Per Capita



Graham T.T. Mollitor, Public Policy Forecasting, Inc., 1982. Based on Statens Jordbraksnämnd data.

Grain Product Consumption: Sweden

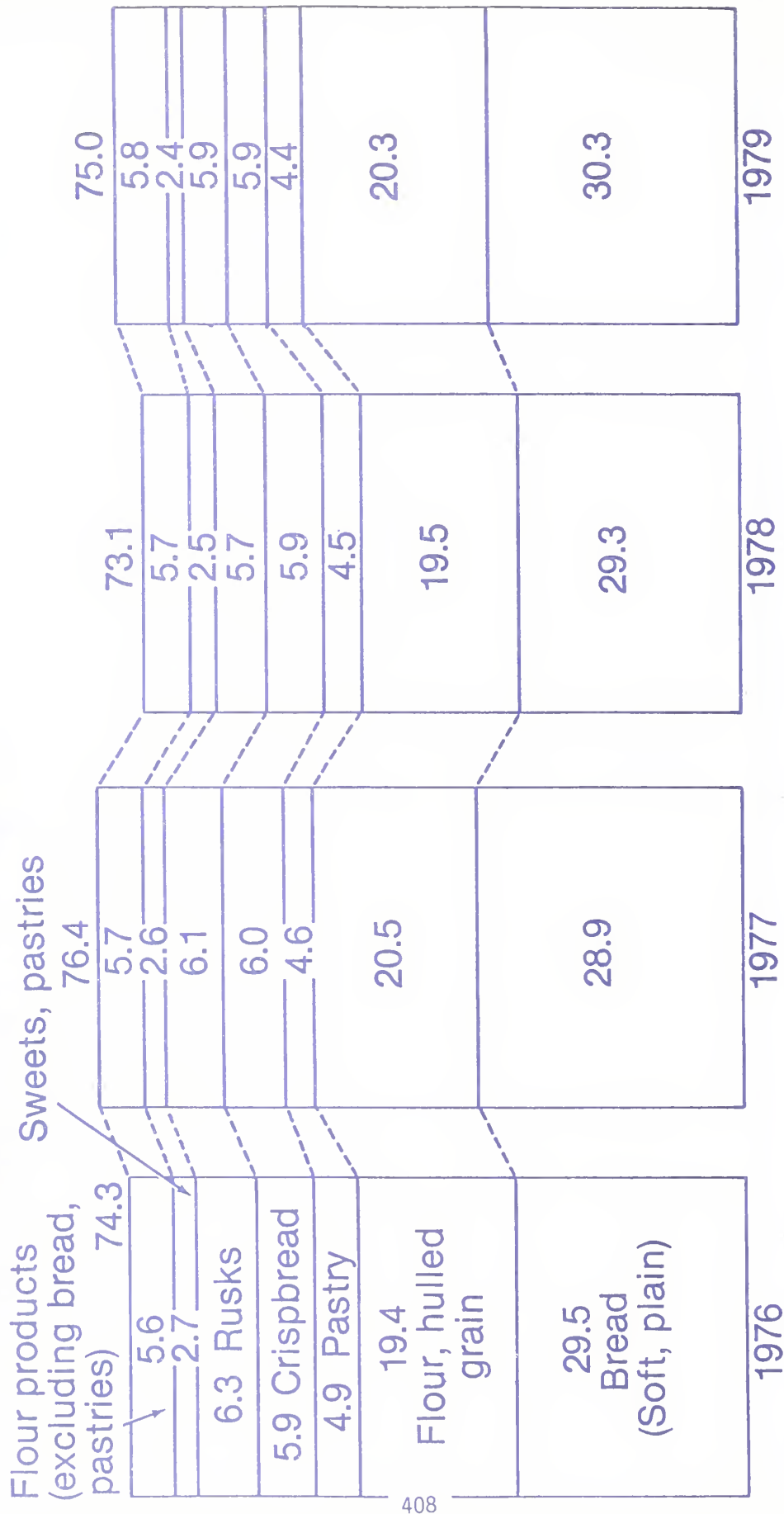
Yearly Kilograms Per Capita



Graham T.T. Molitor, Public Policy Forecasting, Inc., 1982. Based on Swedish Statistical Yearbooks, 1980 & 1981.

Grain Product Consumption: Sweden

Yearly Kilograms Per Capita



Russell G. Barlowe, World Agricultural Outlook Board, USDA

1983 Agricultural Outlook Conference, Session #20
Washington, D.C.

For Release: Tuesday, November 30, 1982



It is a pleasure to be here this afternoon to discuss with you a not-so-pleasurable world cotton situation and outlook. With global consumption still plagued by sluggish economic activity, record supplies are depressing producer prices around the world. Stocks continue to build, with the United States burdened by most of the surplus. This unhealthy situation is likely to continue into 1983/84 and perhaps beyond, unless we encounter weather problems in several major producing areas and/or we experience a speedy and vigorous revival in textile activity.

1982/83 Situation

A fairly close balance between production and consumption highlights the 1982/83 world cotton situation. Output is forecast at 67.2 million bales, nearly 4 million below last season, but moderately above the 1976-80 average. Global mill use is estimated at 66.5 million bales, slightly below production, but a million above 1981/82 consumption. So, this season's ending stocks are expected to total modestly above the 28.1 million bales on hand at the beginning of 1982/83 and sharply above the average level of recent years (figure 1).

Production

As shown in figure 2, world cotton production this season is slipping about 5 percent below 1981/82's record 71 million bales, primarily reflecting reduced harvested area and production in the United States. Still, global output remains near trend, which over the past decade has evidenced an annual growth of about 0.7 million bales. Most of this increase has originated outside the United States. Foreign production in 1982/83 is placed at 55.3 million bales, near last season's all-time high.

China has taken over the top spot in world cotton production, displacing the United States--the 1981/82 leader--and the Soviet Union--the leader during the late 1970's. This season's Chinese crop is forecast at a record 15 million bales, up 1.4 million from 1981/82 and nearly 5 million above the recent 5-year average. This remarkable growth reflects moderately larger area and sharply higher yields.

Cotton output in the Soviet Union, the number-two producer this season, is forecast at about 13.3 million bales, as adverse weather is dropping production slightly below last season's crop. Soviet production, after steadily increasing during the 1970's, has leveled off in the early 1980's in the 13-14-million-bale range.

Production in India and Pakistan, the world's fourth and fifth leading producers, respectively, is forecast to change little this season. While output in India may be down slightly, Pakistani production may be a little better, continuing the upward trend of recent years (figure 3).

Moderately to sharply smaller cotton production is forecast in Central America, Mexico, Colombia, Australia, and Thailand, primarily reflecting reduced area. Elsewhere, output this season is expected to remain near year-earlier levels.

Consumption

Despite the current worldwide economic slowdown and continued intense competition from manmade fibers, global cotton use in 1982/83 is estimated at a record-high 66.5 million bales, up a million from last season. Most of the gain is anticipated in centrally planned economies where recessionary pressures are not as strong and the needs of a growing population is the dominant factor. As shown in figure 4, larger expected consumption this season continues the upward trend of the past decade. Increasing foreign use of recent years has more than offset declining U.S. use, resulting in growing world consumption. This season, foreign use is forecast at 61.1 million bales, with most of the 0.8-million-bale gain over 1981/82 originating in China. Though foreign use is expected to be up during 1982/83, consumption forecasts have been trimmed in each of the last four months as the world economy continues to stagnate.

China is the world's largest cotton consumer, accounting for about one-fourth of total use. Mill use there is estimated at 16.5 million bales this season, 0.7 million above 1981/82 and 4 million above the 1976-80 average. Consumption in the Soviet Union, which occupies the number two spot, continues to steadily expand and is placed at 9.5 million bales this season. Mill use in the other major consuming countries--India, the United States, and Japan--may match or exceed last season's consumption. The exact level will depend on the timing and extent of economic recovery, which most forecasters now see as a gradual expansion beginning in 1983 (figure 5).

Stocks

With 1982/83 world cotton production expected to total marginally above consumption, stocks at the end of the season are estimated at 28.6 million bales, up 0.5 million. The United States may account for slightly over one-fourth of global stocks, the highest percentage since the late 1960's. In sharp contrast to the recent volatility in U.S. stocks, foreign stocks have remained relatively stable since 1977 at close to the 20-million-bale level. Foreign stocks at the end of this season are placed at 21.1 million bales, down slightly from a year earlier (figure 6).

Trade

After strengthening during the 1970's, due in large part to growing import needs by China's textile industry, world cotton import demand has weakened appreciably since 1979. Imports this season are forecast at 18.1 million bales, down from 20 million in 1981/82 and the smallest since

1976/77. Major reasons for the recent decline include increased cotton production in several major importing countries--most notably China--as well as sluggish consumption in other major importers, principally in the Far East and Europe (figure 7).

So, the reduced import demand of recent years translates into smaller world cotton exports. Shipments in 1982/83 are estimated at 18.2 million bales, nearly 2 million below both last season and the 1976-80 average. U.S. exports this season are estimated at 5.8 million bales, nearly a million below 1981/82, primarily reflecting reduced sales to China. Gordon Lloyd will elaborate on the Chinese situation in a few minutes. Major foreign exporters' shipments also are down over one-tenth to 8 million bales. U.S. exports are expected to account for about 32 percent of world trade, slightly below last season's share (figure 8).

Prices

With relatively large production and sluggish demand, world cotton prices weakened significantly during 1981. After improving in early 1982, prices have again fallen off. The Northern European Outlook "A" Index in early November averaged about 69 cents per pound, slightly below a year earlier and sharply below early 1981 (figure 9).

The worldwide recession also has severely affected the manmade fiber industry. Most plants here and abroad now are running at only 60-70 percent of capacity and prices are depressed. After reaching a high of 85 cents per pound in mid-1981, U.S. polyester prices have steadily trended down to the current level of less than 75 cents. Similar price weakness is evident in Europe and the Far East. In West Germany, polyester prices have slipped about 15 cents a pound during the past year. The sharpest price decline has occurred in Taiwan, however, where current prices of about 52 cents a pound are 20 cents below a year earlier, making polyester prices very competitive with cotton (figure 10).

Outlook for 1983/84

I would like to shift gears now and give you some of my views on the world cotton outlook for 1983/84. As you know, it is extremely difficult to look this far ahead with any degree of certainty. Weather and economic uncertainties always cloud the outlook. However, current supply-demand conditions and trends point to the likelihood of certain developments next season.

Production

As shown in figure 11, world cotton production has increased rather significantly over the past decade. While harvested area has remained relatively stable at close to the 1973 level, yields have trended up about 6.5 kilograms per hectare (5.7 pounds per acre). Let's examine 1983/84 prospects for these two components of production.

Area devoted to next season's global cotton crop will depend primarily on prices of cotton and alternative crops at planting time, government policies and programs, and weather. We can dispense with the weather

factor very quickly as the only reasonable assumption one can make at this early juncture is normal or average weather conditions. Government programs are also an unknown factor at this time, with the exception of the United States where a 20-percent acreage reduction and optional 5-percent paid land diversion program will be in effect. Charles Cunningham will provide details of this program later in the session. In addition, we know that present policies in China promote production of cash crops, like cotton, at the expense of grains.

This leaves cotton prices, forecasting of which is not without its perils for a couple of reasons. First, it's an extremely difficult exercise given the volatility of cotton supply and demand. Second, it's illegal for government employees to do so. Consequently, I will not be forecasting cotton prices today. However, I will assume two different price levels in order to assess the possible impact on 1983/84 world cotton area.

The cotton price I will examine today is the so-called Outlook "A" Index, which is an average of five c.i.f. Northern European quotations for Middling 1-3/32-inch cotton grown in various countries. It is probably the most representative of a world cotton price. During the first three months of the 1982/83 season, the Index averaged 73 cents a pound, close to the average for 1981/82. However, prices have weakened since August and now are around 69 cents a pound. This price is in line with the fundamentals of the 1982/83 world cotton situation.

Figure 12 shows a fairly close relationship between cotton prices and the ratio of world ending stocks to use during the past decade. Given our estimate that ending stocks this season will equal about 43 percent of world use, the same ratio as last season, the equation indicates a price of 67 (± 7) cents a pound. If cotton supply and demand remains stable over the next few months, one could assume that prices at planting time next spring in Northern Hemisphere countries (which account for slightly over 90 percent of global production) would remain close to this level.

Cotton prices have a significant impact on world cotton area the following year, as shown in figure 13. Using the assumed price range of 60-74 cents a pound, the equation indicates harvested area of 31.0-32.2 million hectares, which brackets 1982/83's 31.6 million. Barring a repeat of last summer's adverse weather, it is likely that we will see larger U.S. harvested area next season. As Keith Collins will explain later, U.S. plantings may increase despite the acreage reduction program. However, foreign area could hold steady or decline slightly.

Next, let's turn to yields. Among the many factors influencing cotton yields, perhaps the most important is weather. Figure 14 shows that world yields have steadily trended up since the late 1960's, increasing about 1-1/2 percent a year on the average. Assuming average weather next season, a trend yield of 463 (± 14) kilograms per hectare is indicated, identical to the 1982/83 yield. While U.S. yields will likely fall from the current season's record level, foreign yields may continue to trend up.

Consequently, if 1983/84 world cotton area totals 31.0-32.2 million hectares and yields average close to the trend level of 463 kilograms a

hectare, a global cotton crop of 65-70 million bales is indicated, the midpoint of which is very close to 1982/83's 67.2 million. Among the major producing countries of China, the Soviet Union, and the United States, production could match or exceed 1982/83 output.

Consumption

World cotton consumption prospects for 1983/84 depend heavily on the level of economic and textile activity in major consuming countries and on the rigidity of textile trade barriers. Although the outlook for the next few months remains rather bleak, there is cautious optimism that economies around the world will begin to show some improvement in 1983. Thus, cotton use next season will depend on both the extent and timing of recovery in textile activity. Continued sluggish activity likely would mean use around 1982/83's 66.5 million bales. On the other hand, a more robust recovery—such as that which occurred following the 1974-75 recession—could boost cotton consumption above the trend projection of 67.3 million bales. So, world use next season could range from 65-70 million bales, about the same level as production (figure 15).

Trade

With prospects for somewhat larger use next season, particularly in major foreign importing countries, and abundant supplies in major exporting countries, including the United States, world cotton trade is expected to rebound from this season's 18.2 million bales. Competitive prices and large supplies should enable U.S. exports to exceed the 1982/83 level. Exports from the Soviet Union and other major foreign exporters also should benefit from increased demand. Adrian Hunnings will have more to say about the longer term export demand a little later.

Summary

In conclusion, my preseason view of the world cotton outlook for 1983/84 is for another close balance between production and consumption, with not too much change in stocks. Output could range from 65-70 million bales, near this season's 67.2 million. Consumption and trade prospects, of course, hinge on improved economic and textile activity. Global use also could total 65-70 million bales, compared to this season's 66.5 million. If we should get a moderate recovery in consumption, ending stocks could be worked down a little from the estimated beginning level of 28.6 million bales (figure 16). Larger consumption and improved prices would certainly be a step in the right direction toward restoring economic health to the world cotton community.

WORLD COTTON PRODUCTION, CONSUMPTION, AND STOCKS

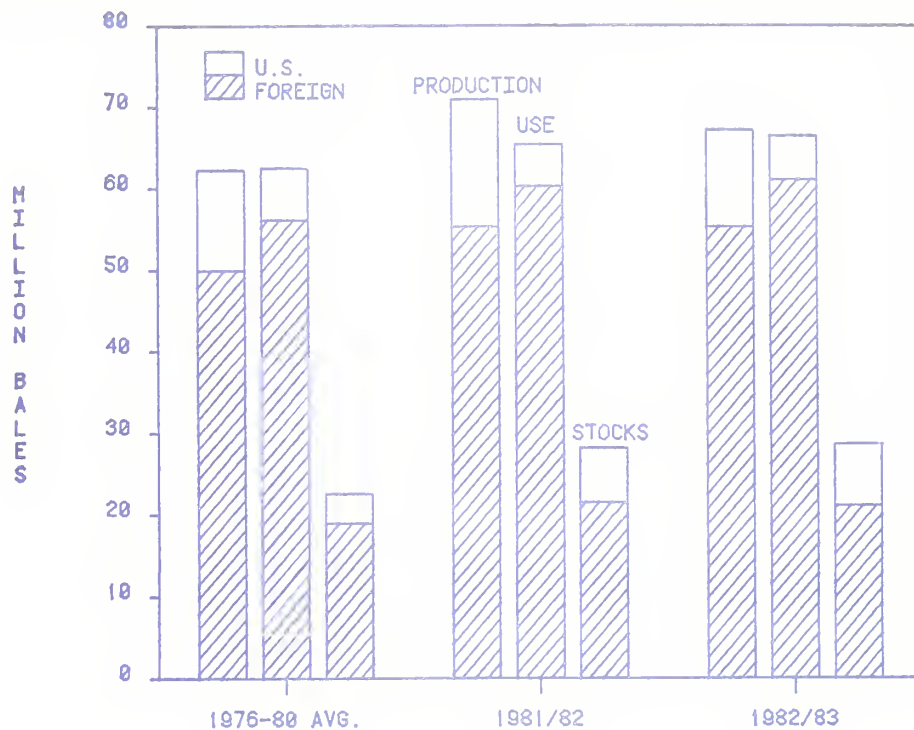
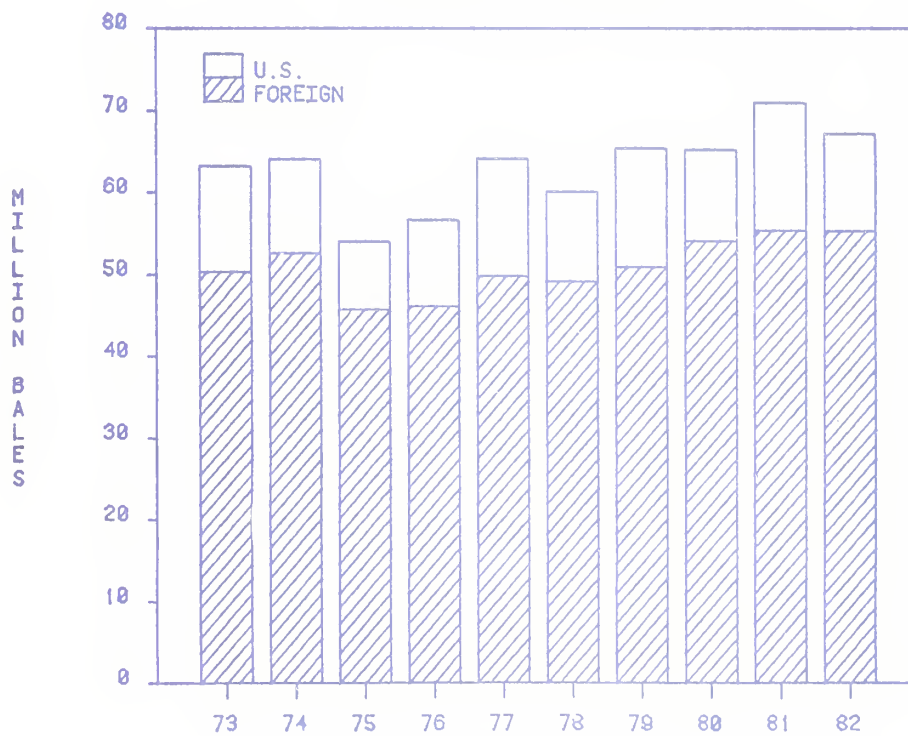


FIGURE 1

WORLD COTTON PRODUCTION



Year beginning August 1

FIGURE 2

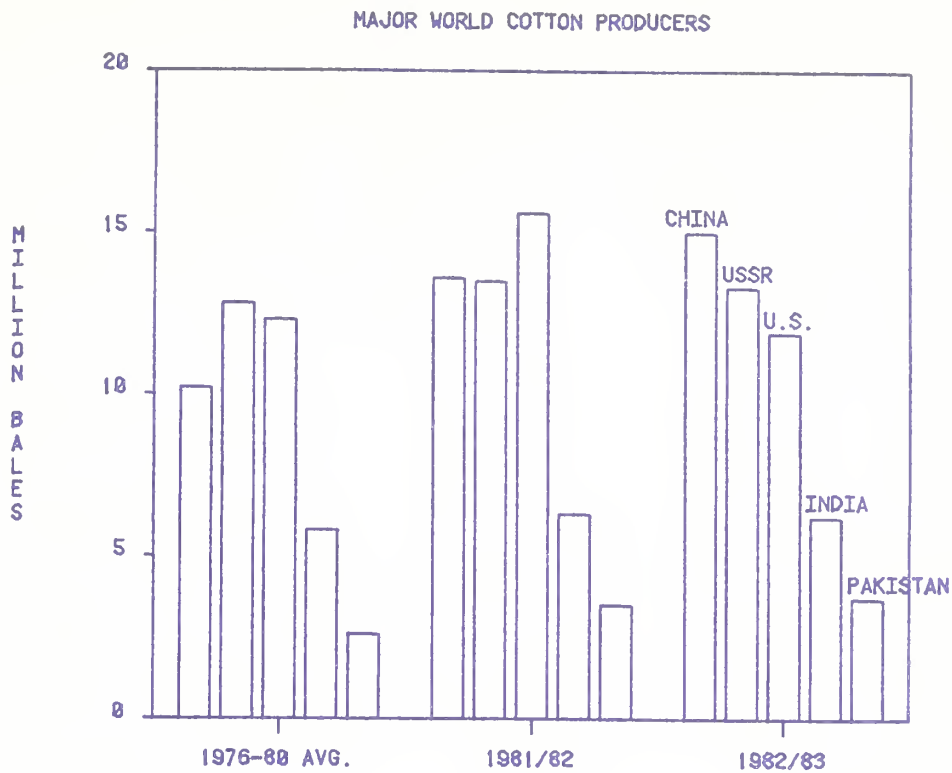


FIGURE 3

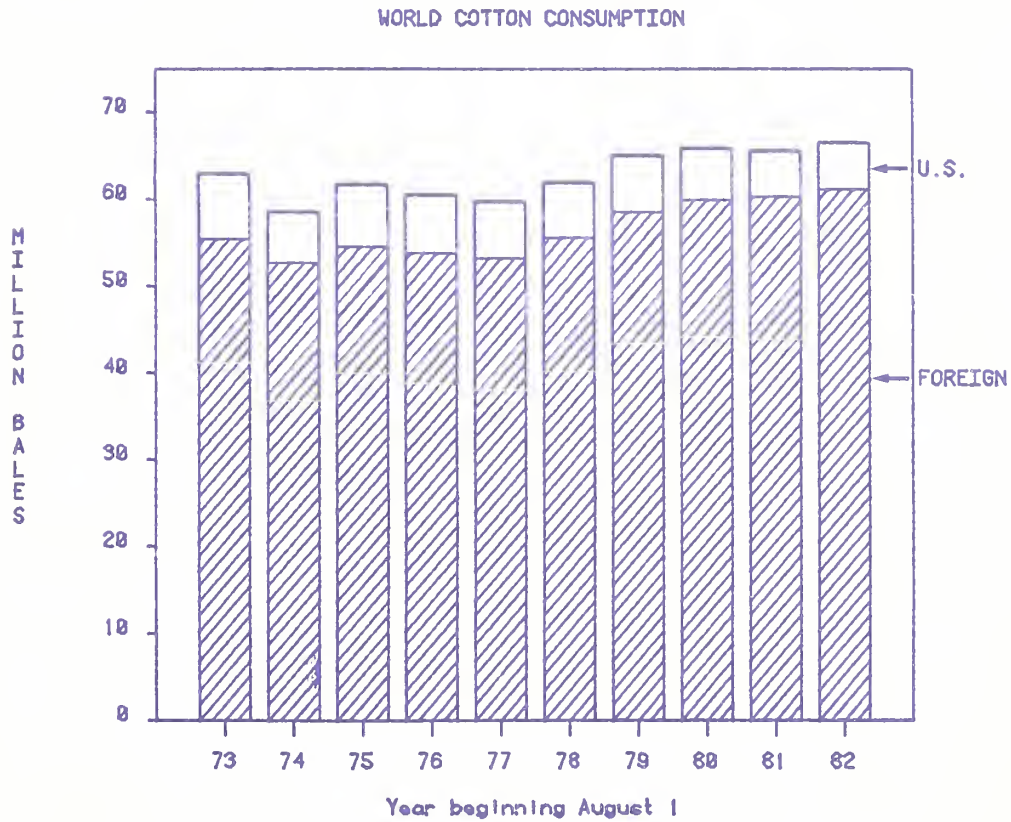


FIGURE 4

MAJOR WORLD COTTON CONSUMERS

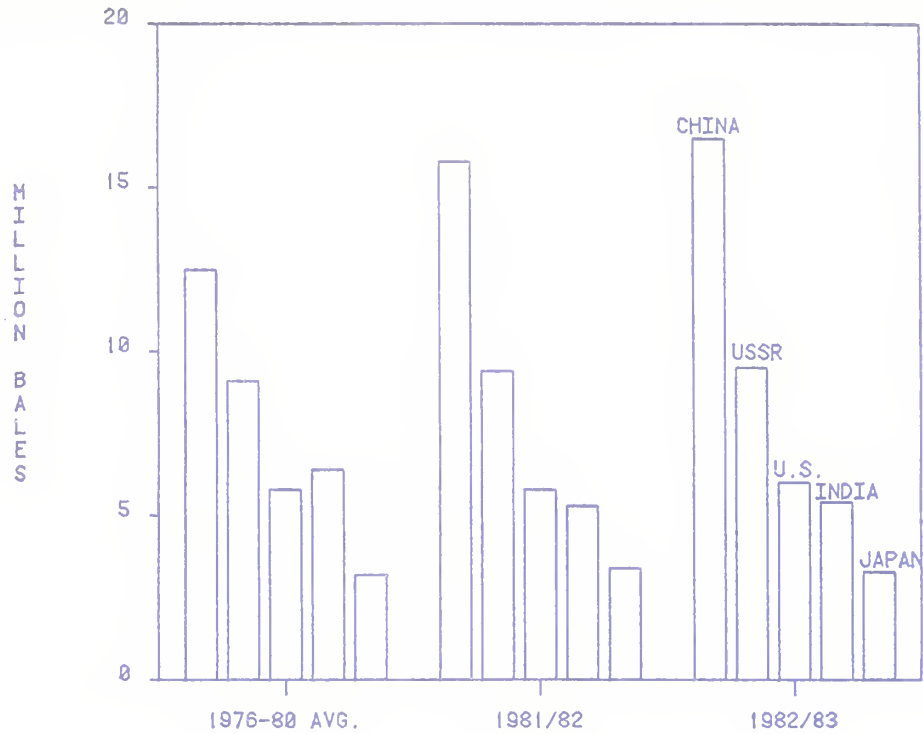


FIGURE 5

WORLD COTTON STOCKS

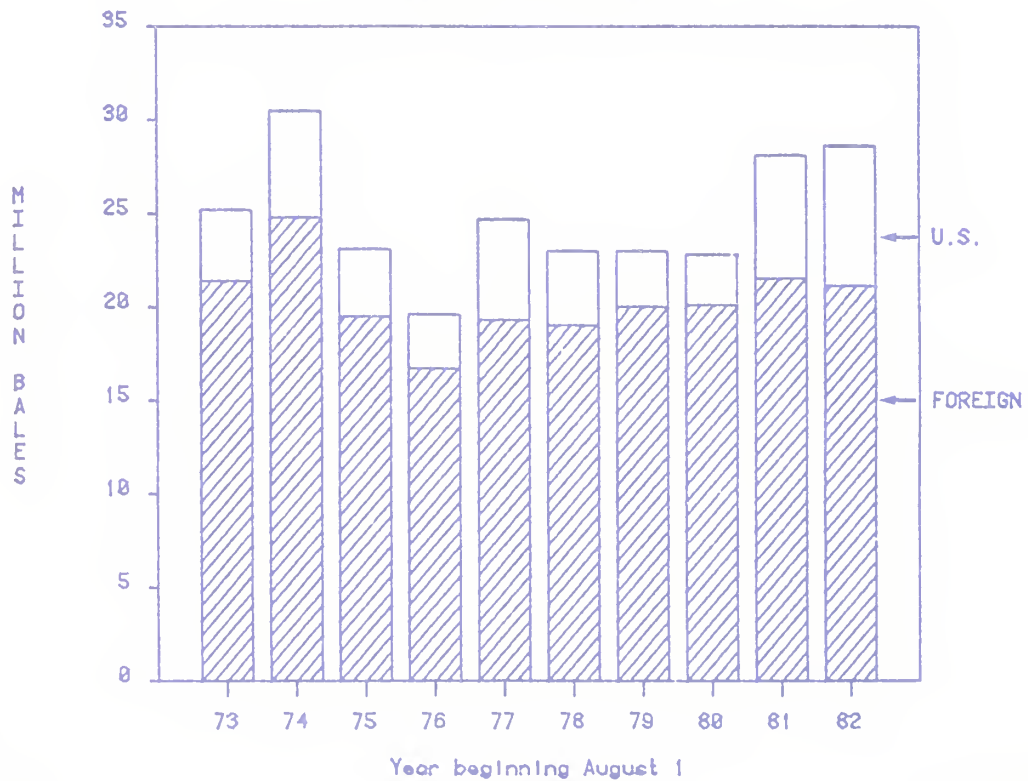
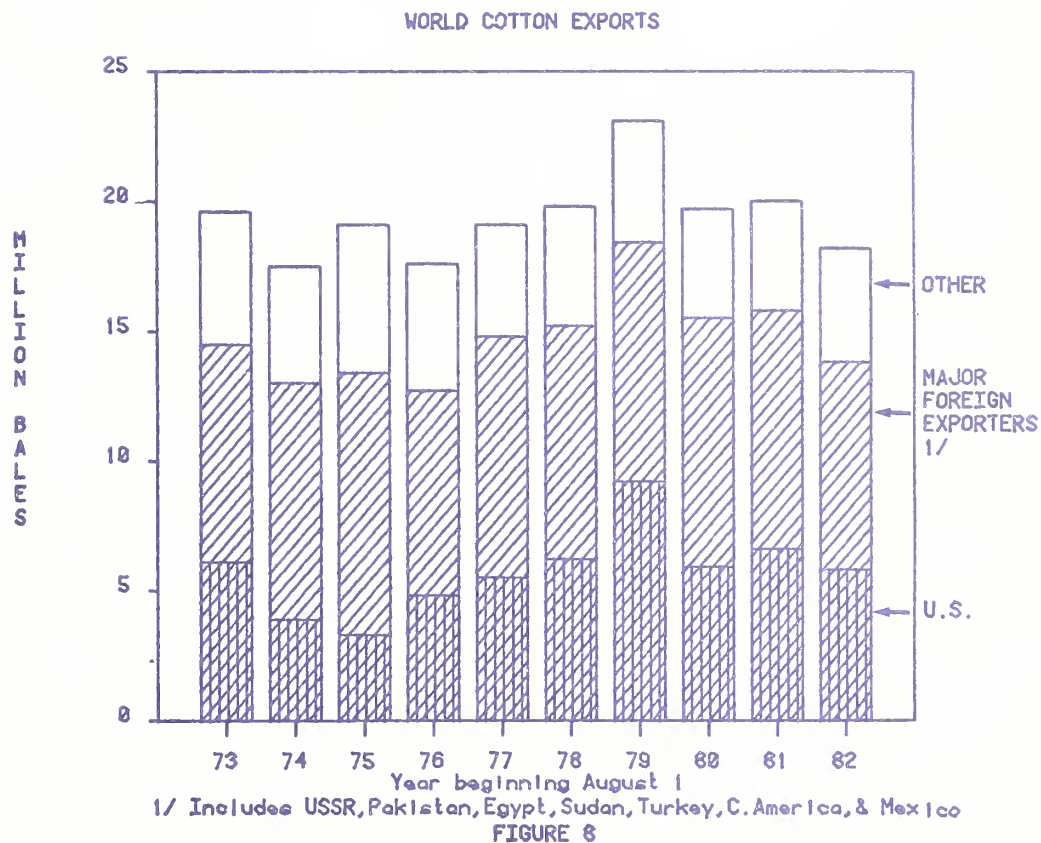
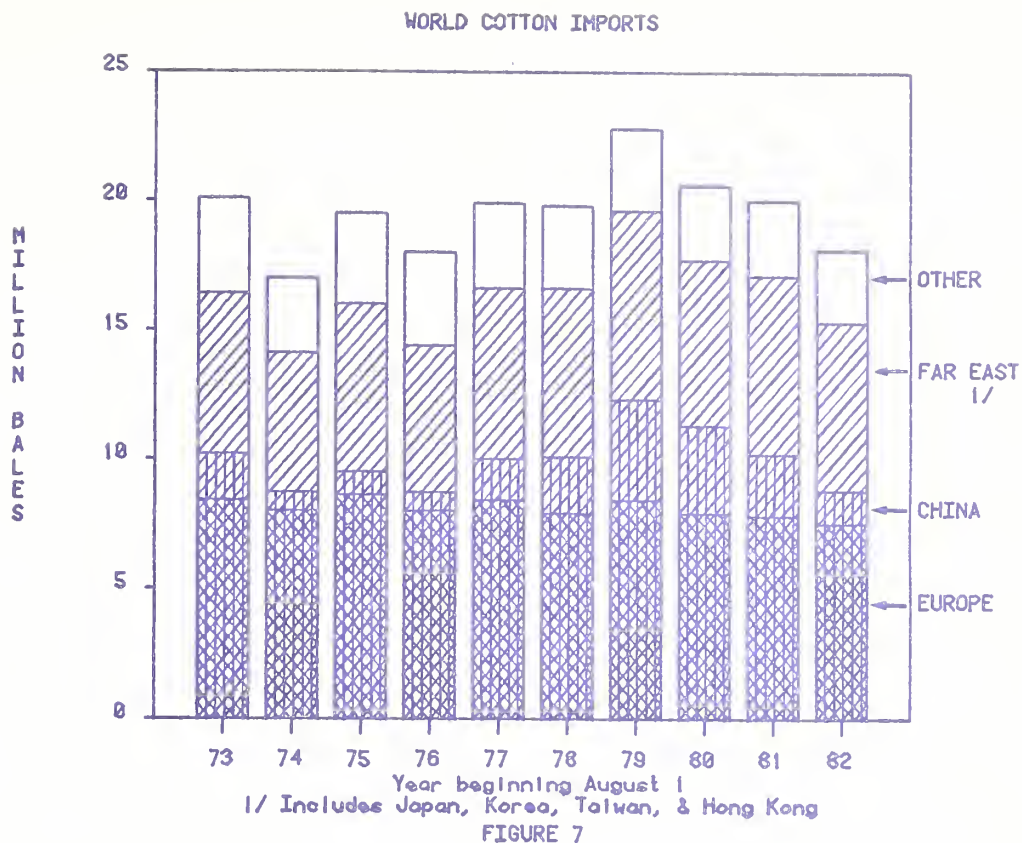


FIGURE 6



WORLD COTTON PRICE: NORTHERN EUROPE OUTLOOK "A" INDEX

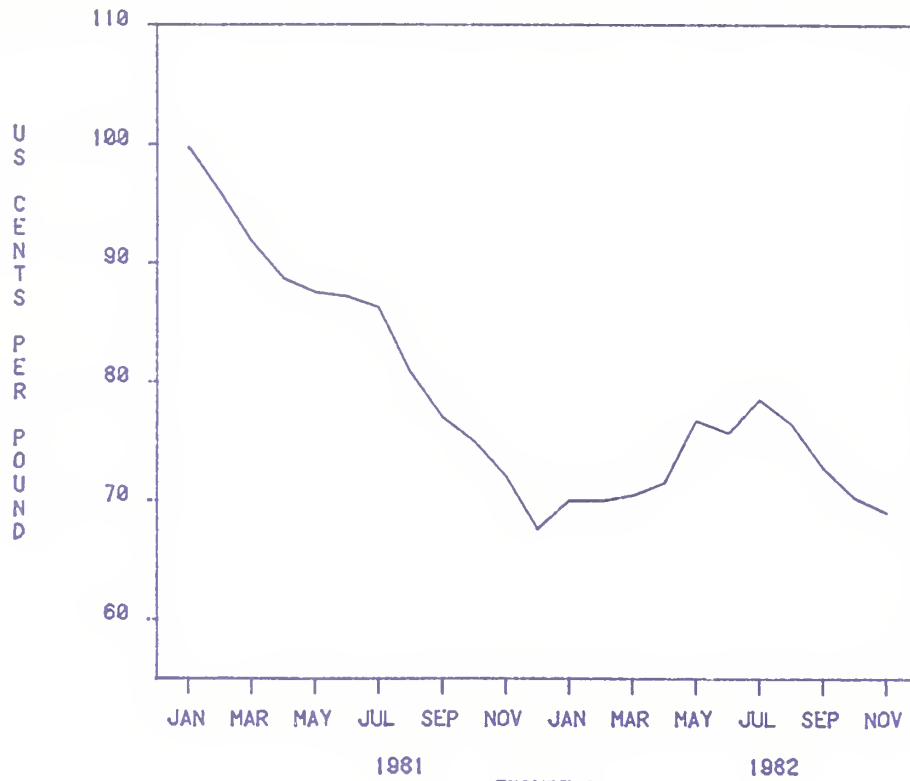


FIGURE 9

POLYESTER PRICES IN SELECTED COUNTRIES

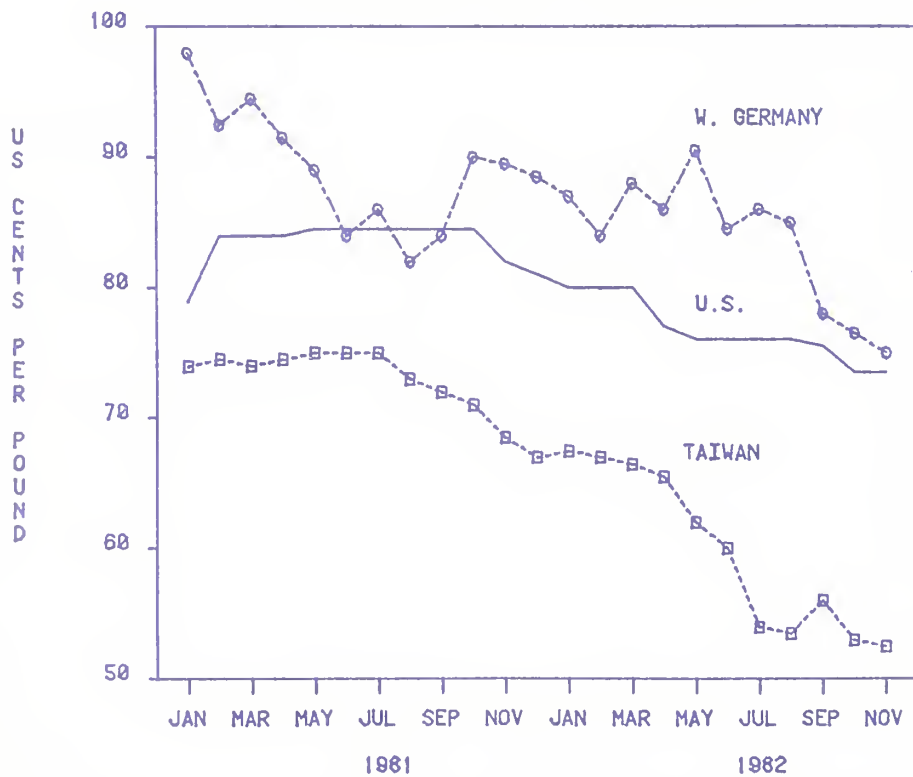
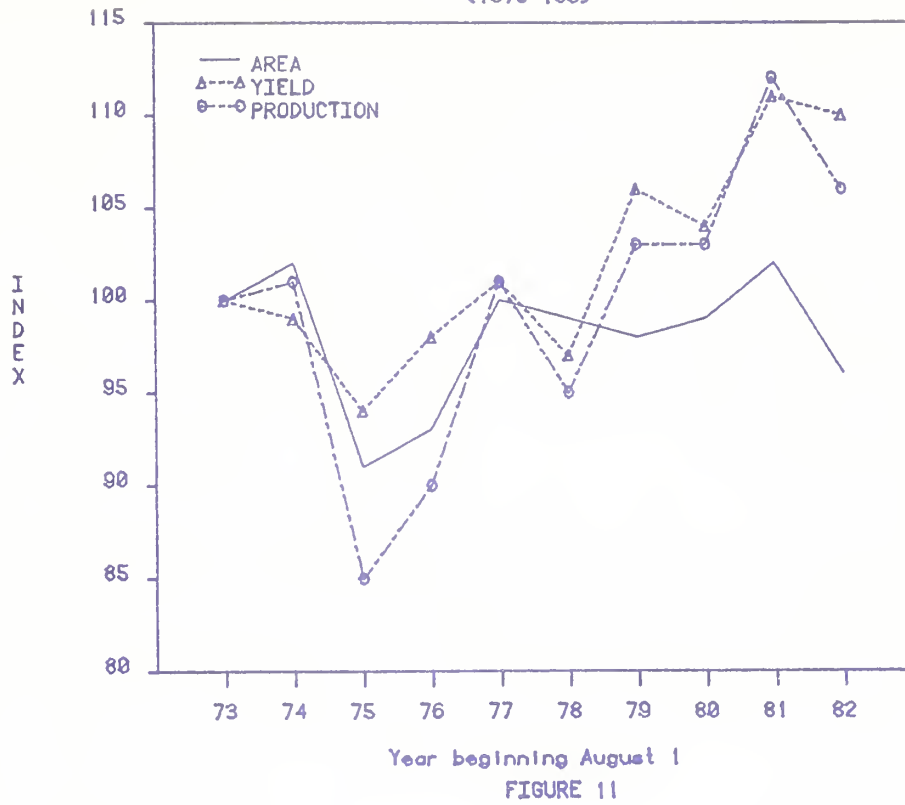
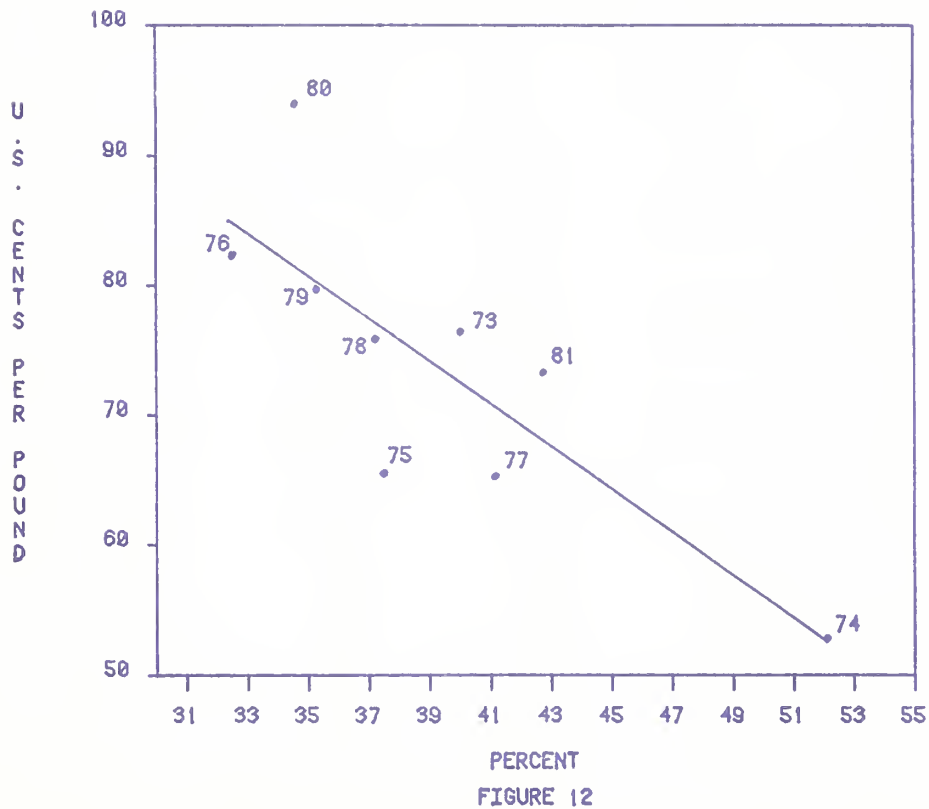


FIGURE 10

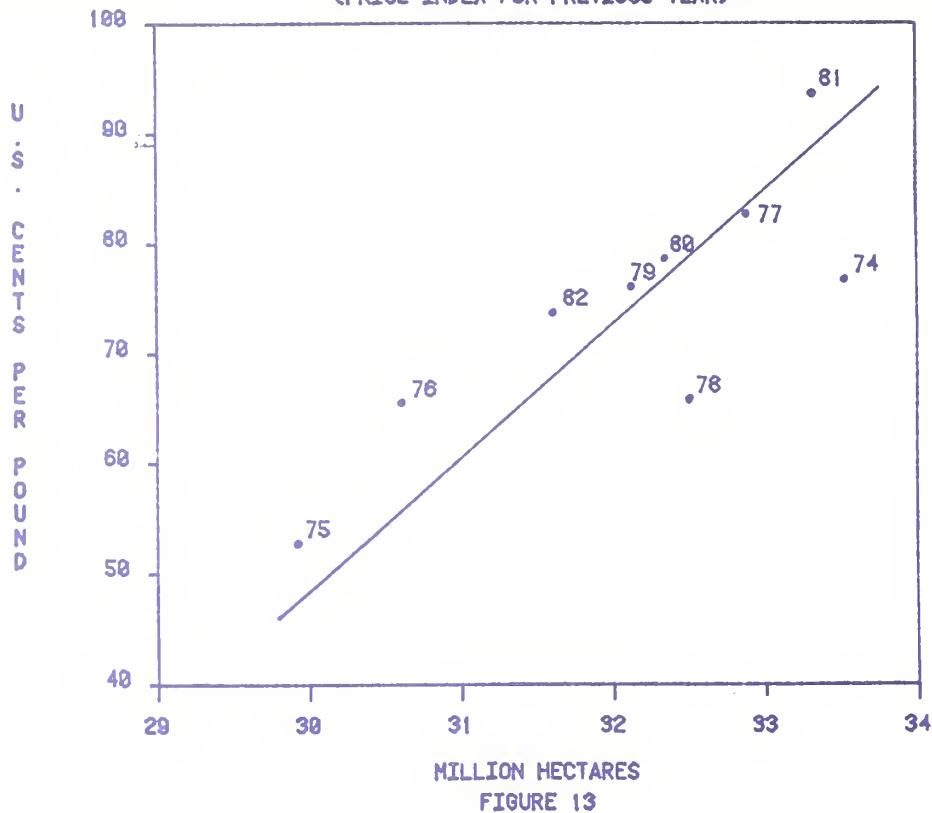
WORLD COTTON AREA, YIELD, AND PRODUCTION
(1973=100)



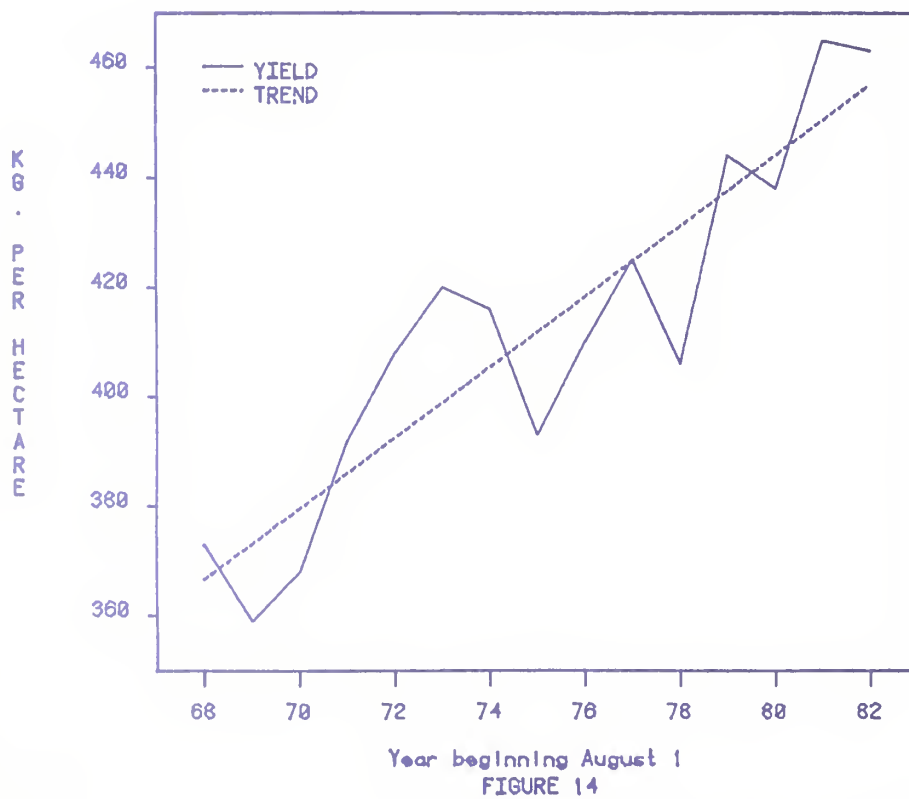
WORLD COTTON PRICES AND RATIO OF STOCKS TO USE

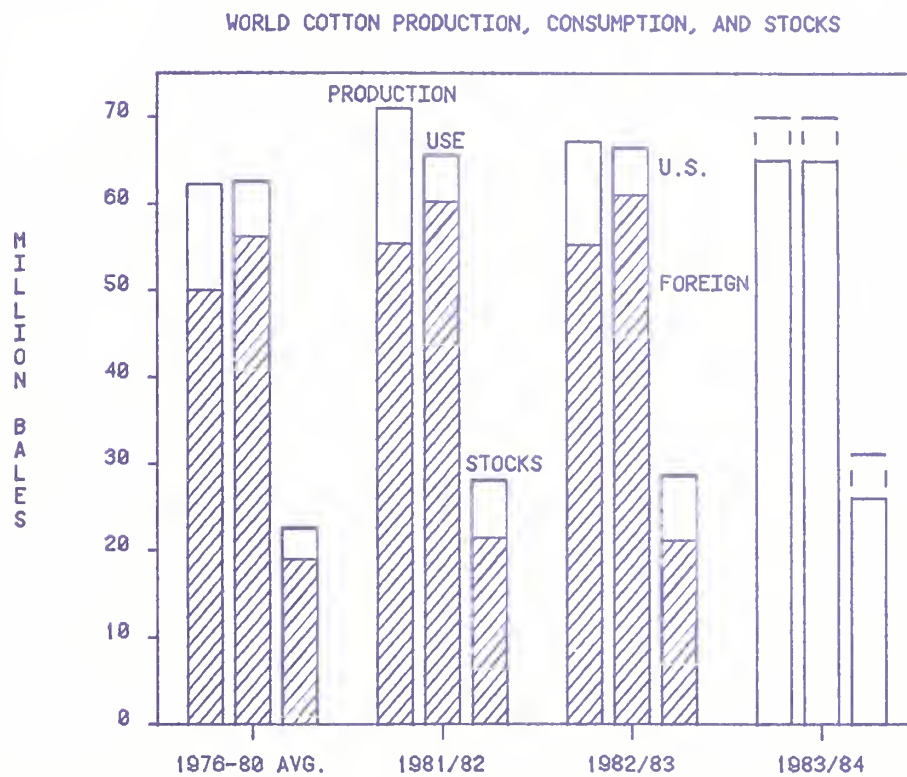
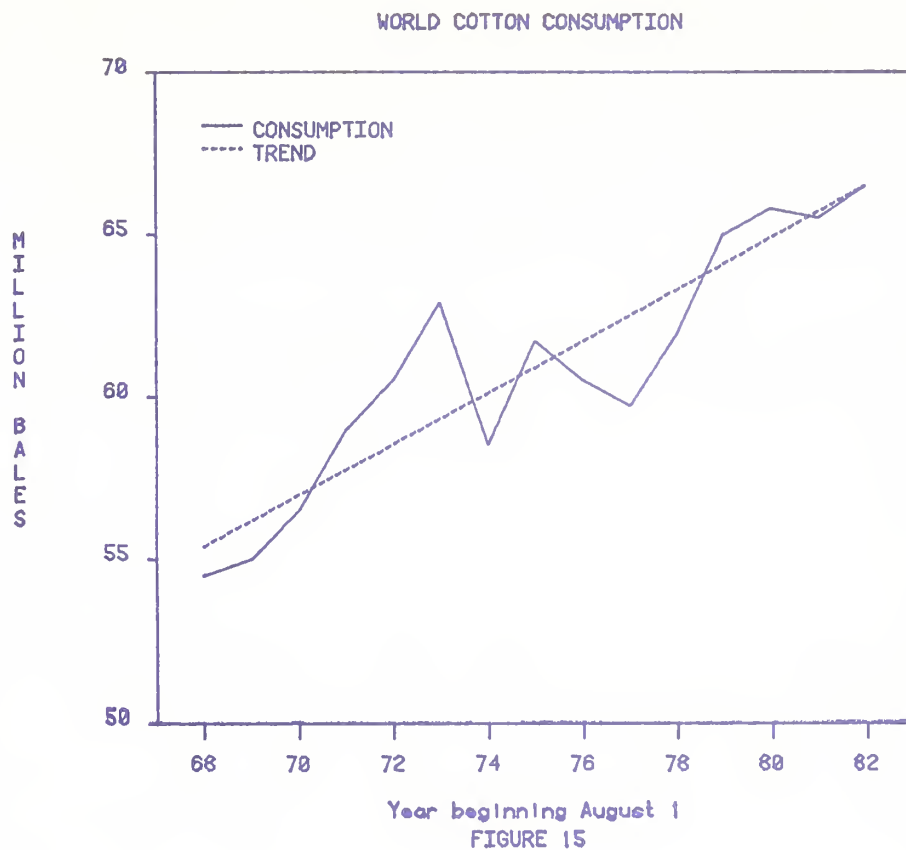


NORTHERN EUROPE OUTLOOK "A" PRICE INDEX AND HARVESTED AREA
(PRICE INDEX FOR PREVIOUS YEAR)



WORLD COTTON YIELDS





Keith Collins, Economic Research Service, USDA

1983 Agricultural Outlook Conference, Session #20
Washington, D.C.



For Release: Tuesday, November 30, 1982

This season's outlook for the U.S. cotton market is being dictated by rising supplies and falling demand. Excessive carryin stocks and record yields will likely boost 1982/83 supplies to the highest level since 1967/68. At the same time, weak demand has pushed prospects for total use to the lowest level since 1975, a year of severe recession. This combination of supply and demand changes is expected to raise carryover stocks this season to a 16-year high.

This afternoon, I am going to cover the fundamental factors that account for this outlook. I will focus on domestic demand, price response, and some aspects of the huge stock level--such as the role of the Commodity Credit Corporation (CCC) and the effectiveness of the loan rate as a price floor. I will conclude by assessing the prospects for participation in the 1983 program and the program's potential to move the U.S. cotton market back toward balance.

Supply Up

Based on conditions as of November 1, the 1982 cotton crop is placed at 11.9 million bales, 24 percent below last year, but well above earlier expectations. Because of the Texas crop disaster in early summer, the 9.5 million acres that are expected to be harvested account for only 82 percent of U.S. planted area, compared with an average of about 95 percent. However, record yields are offsetting the area drop. This season's average U.S. yield is forecast at 605 pounds per harvested acre, 58 pounds above the record set in 1979. This sharp jump is due primarily to crops in the Delta and the Southeast and the smaller share accounted for by the lower-yielding Southwest. In the Southwest, yield is forecast to fall about 10 percent below the previous 5-year average and rise above it by 10 percent in the West. But, in the Delta and Southeast, the increases above the previous 5-year average are dramatic--39 and 56 percent, respectively.

Combining carryin stocks of 6.6 million bales with the expected production gives a total supply of 18.6 million bales this season--300,000 above 1981/82.

Mill Use Shows Little Strength

Russel Barlowe covered the prospects for exports, so I will concentrate on the other half of demand--domestic mill use.

Figure 1 shows domestic consumption (mill use plus net imports of cotton textiles) of cotton and its relationship with overall economic activity and net imports of cotton textiles (imports less exports). Both domestic consumption and net cotton textile imports are measured in raw cotton equivalent bales--the amount of raw cotton required to produce the textiles. Domestic mill use is the difference between domestic consumption and net imports (the middle and bottom lines of figure 1). Shaded areas indicate recessions. The indicated slowdowns in the growth of the gross national product (GNP) reduced consumer purchases of cotton textiles thus lowering mill use. At the same time, the general upward trend in the cotton textile trade deficit has meant consumers are purchasing more foreign-produced textiles at the expense of domestically produced textiles. Figure 1 shows data through the first half of 1982 converted to an annual rate. It is clear domestic mill use is getting squeezed at the retail counter and by foreign competitors.

The outlook for U.S. cotton mill use during 1982/83 is not bright. Mill use is forecast at 5.4 million bales, up only marginally from last season's 5.3 million. The following factors have been considered in the formulation of this forecast:

- o Personal consumption expenditures--Reflecting negative GNP growth, they have been essentially stagnant since the fourth quarter of 1980. Expenditures are expected to show steady, but slow, growth during 1983. This growth will increase domestic consumption of textiles, encourage confidence in retailers and cutters, and lower inventories--all of which will boost cotton mill use. Unfortunately, the boost may not come until late winter or spring and will not help much this season.
- o Textile trade--Figure 2 shows how rapidly imports have grown and exports fallen during the past 2 years. The strengthening dollar has fueled these trends. There is little on the horizon to suggest a major turnaround. Weak foreign economies will likely keep cotton textile exports restrained through most of 1982/83. The bilateral agreements negotiated under the Multi-fiber Arrangement will have little effect on imports in the short run. The dollar exchange rate will likely remain strong, but some weakening could occur if U.S. interest rates fall faster than foreign rates and stay low. It is the differential between rates, not the absolute level of the U.S. dollar, that determines capital flows, hence the demand for dollars. Also, a bounce in consumer spending could increase imports of all products thus eroding the current account trade balance and lead to a weakening of the dollar exchange rate.
- o Relative prices of raw fiber--This factor is probably overstated as a determinant of cotton mill use. As figure 3 shows, cotton's share of staple used on the cotton system has hovered around 60 percent since 1978, despite wide price swings. Prices are the

Group B mill price for cotton and 1.5 denier, f.o.b. producing plants, for polyester staple. A one-percentage-point gain for cotton is equivalent to less than 100,000 bales. Moreover, manmade fiber prices may be administered to follow cotton prices and discounting may make quoted list prices unrealistic to use for assessing competitive advantage. Nevertheless, the raw fiber equivalent price of cotton was 74 cents a pound during October, compared with 78 cents for polyester--a continuation of what happened during the first half of 1982 when cotton prices averaged 86 percent of polyester. This is in sharp contrast with the 5 to 20 cent premium on cotton prior to 1981/82, and it may suggest a stronger share for cotton in 1982/83.

- o Stability of cotton price--Many cotton buyers indicate the instability of cotton prices works against increased cotton use, because it may be infeasible to pass on a high-priced fiber purchase if other processors are able to cover their needs with lower prices. The current surplus of cotton made prices fairly stable during 1981/82, and it is likely to do so during 1982/83 and perhaps beyond.
- o Denim market--Accounting for as much as a fifth of cotton mill use, a recovery in denim is an important prerequisite for a recovery in U.S. cotton mill use. Reports indicate denim orders are picking up. The industry continues to find new ways to differentiate the product and shed the "mature industry" epithet. Spring lines will emphasize products such as full-cut denim jeans for mature figures, stretch denim, and a return to the medium-blue colored denim. Denim jeans will include colors and patterns, such as stripes and herringbones, stone-washed, overdyed, and even blue that resists fading and stays newer longer. After a period of consumer apathy, the time may be right for the denim market to start to show strength.
- o Inventories--Retail inventory/sales ratios at general merchandise stores are in good balance--in early fall, they were only running about 2 percent above a year earlier. Although some items were out of balance, overall inventories of textile mill products were below a year earlier. If retailers perceive a pickup in sales and expect it to be sustained, the textile industry generally seems poised to translate retailers' new orders into spindle, loom, and knitting machine activity, rather than lengthy inventory reduction.

Figure 4 indicates the monthly pattern of mill use. During August and September, it averaged a 5.2-million-bale annual rate. In order to reach the 5.4-million-bale forecast, mill use will have to start rising soon, and average 5.44 million bales for the rest of the year. Let's summarize supply and demand for 1982/83 by taking a look at the balance sheet:

Market at a Glance

	1981/82	1982/83
	- - Million bales - -	
Beginning stocks	2.7	6.6
Production	15.6	11.9
Supply	18.3	18.6
Exports	6.6	5.8
Mill use	5.3	5.4
Total use	11.8	11.2
Ending stocks	6.6	7.5

What Will Prices Do?

Through March 1982, farm prices averaged 54.7 cents a pound--about 2 cents above the loan rate for SLM 1-1/16-inch cotton. With stocks expected to rise, it will be difficult to move farm prices very far from the loan rate this season. The loan rate on 1982-crop cotton is 57.08 cents a pound for SLM 1-1/16-inch cotton at average location. The preliminary October farm price rose to 59.5 cents from 54.9 in September, perhaps reflecting the higher loan rate, but deliveries of forward contracted cotton and better qualities might also have been factors.

Figure 5 shows that the use-to-supply ratio has been highly correlated with farm prices in recent years. During 1981/82, use was 65 percent of supply. This season, use is forecast to be 61.5 percent of supply. If the past relationship with price held this season, a price several cents below the 1981/82 average would be indicated. But, with about three-quarters of the 1982 crop eligible for loan, an increased loan rate, large forfeitures of 1980 and 1981 cotton to the CCC likely (because average farm prices of 65 to 70 cents will be required by spring to encourage redemption when the loans mature), and high participation in the 1983 program probable, the loan rate may prove to be a fairly effective floor on the spot price in 1982/83, if pressures to keep prices low this season prevail.

The prospect of the largest stocks in 16 years makes one wonder whether the stocks of the early 1960's pushed prices below loan rates. Figure 6 plots ending stocks-to-use ratios against season average farm price divided by the loan rate for crop years from 1961 to 1982 when the stocks-to-use ratio exceeded 40 percent. Although the programs were different then, the farm price never dropped below 95 percent of the loan rate. Historically, the loan rate has been an effective floor. This season's ratio is forecast at 67 percent, on the flat part of the curve.

Participation in the 1983 Program.

With prospects fairly bleak for the remainder of this season, let's turn to 1983/84 and see if relief is in sight. A 20-percent acreage reduction program and a 5-percent paid land diversion program are in effect. What is participation in these programs likely to be?

Participation in the 20-percent acreage reduction program will likely be very high. If farm prices remain 60 cents a pound or below through planting time, growers will probably revise their expected deficiency payment rate up to about 18 to 20 cents a pound, as suggested by figure 7. This rate would be about double the rate many expected during the spring of 1982. However, to obtain it, more land has to be idled than in 1982. Computing costs and returns for a sample farm shows that the ratio of net returns under participation in the 20-percent acreage reduction program relative to net returns under nonparticipation is better than it was in the 1982 program.

Consider a 100 acre farm where the maximum is planted. Harvest and program yield are 500 lbs. an acre. Variable cost (less 50 percent of ginning costs to reflect low cottonseed prices) is \$250 an acre. Ignoring the benefits of advance payments and assuming loan-rate prices with the deficiency payment expected to be 21 cents a pound gives:

$$\frac{\text{Net returns from participation}}{\text{Net returns from nonparticipation}} = \frac{\$8,400}{\$2,500} = 3.36$$

How does this compare with the 1982 crop? In the spring of 1982, under the 15-percent acreage reduction program, loan rate prices and an expected deficiency payment of 13.9 cents a pound, the same farm's returns are:

$$\frac{\text{Net returns from participation}}{\text{Net returns from nonparticipation}} = \frac{\$8,925}{\$3,550} = 2.51$$

So, this situation suggests higher participation in 1983 than this season's estimated 75 percent. However, more persons will hit the \$50,000 payment limit, especially in the West and Delta. Taking this into account, participation could total 65 to 75 percent, and with weak prices for alternative crops, participants will have an incentive to plant the maximum permitted.

What will participation in the diversion look like? Consider the above farm, but compare the net returns from diverting 5 acres (5 percent of base) and earning 25 cents a pound with selling the output from the 5 acres at a loan-rate price and earning the maximum deficiency payment:

$$\begin{aligned} \text{Net returns from diverting} &= \\ 5\text{ac.} \times 500 \text{ lbs./ac.} \times \$0.25 &= \$625 \end{aligned}$$

$$\begin{aligned} \text{Net returns from planting} &= \\ 5\text{ac.} [500 \text{ lbs/ac.} (\$0.55 + \$0.21) - \$250] &= \$650 \end{aligned}$$

This example would suggest the alternatives about break even. So, participation in the paid diversion will likely fall way short of the 20-percent acreage reduction. The payment limit will again be a limiting factor.

With high participation in the 20-percent program, a total base acreage of near this season's 15.3 million, poor expected returns on soybeans, and an incentive to plant the maximum permitted, 1983 plantings could range from 11 to 13 million acres. Because small changes in yield can offset fairly large changes in participation, a good way to assess the stock-reduction potential of the 1983 program is to assume plantings of 12 million acres and examine alternative yields. Let the low yield alternative be 450 pounds an acre; the medium yield, 510 pounds; and the high yield, 570 pounds. If the market gets a sharp rebound in use and there is no difference unaccounted, 1983/84 balance sheets could look like this:

	<u>Low yield</u>	<u>Medium yield</u>	<u>High yield</u>
	- - Million bales - -		
Beginning stocks	7.5	7.5	7.5
Production	10.9	12.1	13.5
Supply	18.4	19.6	21.0
Total use	12.0	12.0	12.0
Ending stocks	6.4	7.6	9.0

In conclusion, it appears that the 1983 cotton program has limited potential to reduce stocks. Even, with large CCC forfeitures, it is unlikely that the market could tighten appreciably under the low yield alternative. The outcome at this time is of course highly uncertain, but it appears that a return to normalcy may take several years, unless the market experiences extremely large surges in demand and production shortfalls here and abroad, or there is a significant change in the 1983 program.

FACTORS AFFECTING COTTON CONSUMPTION

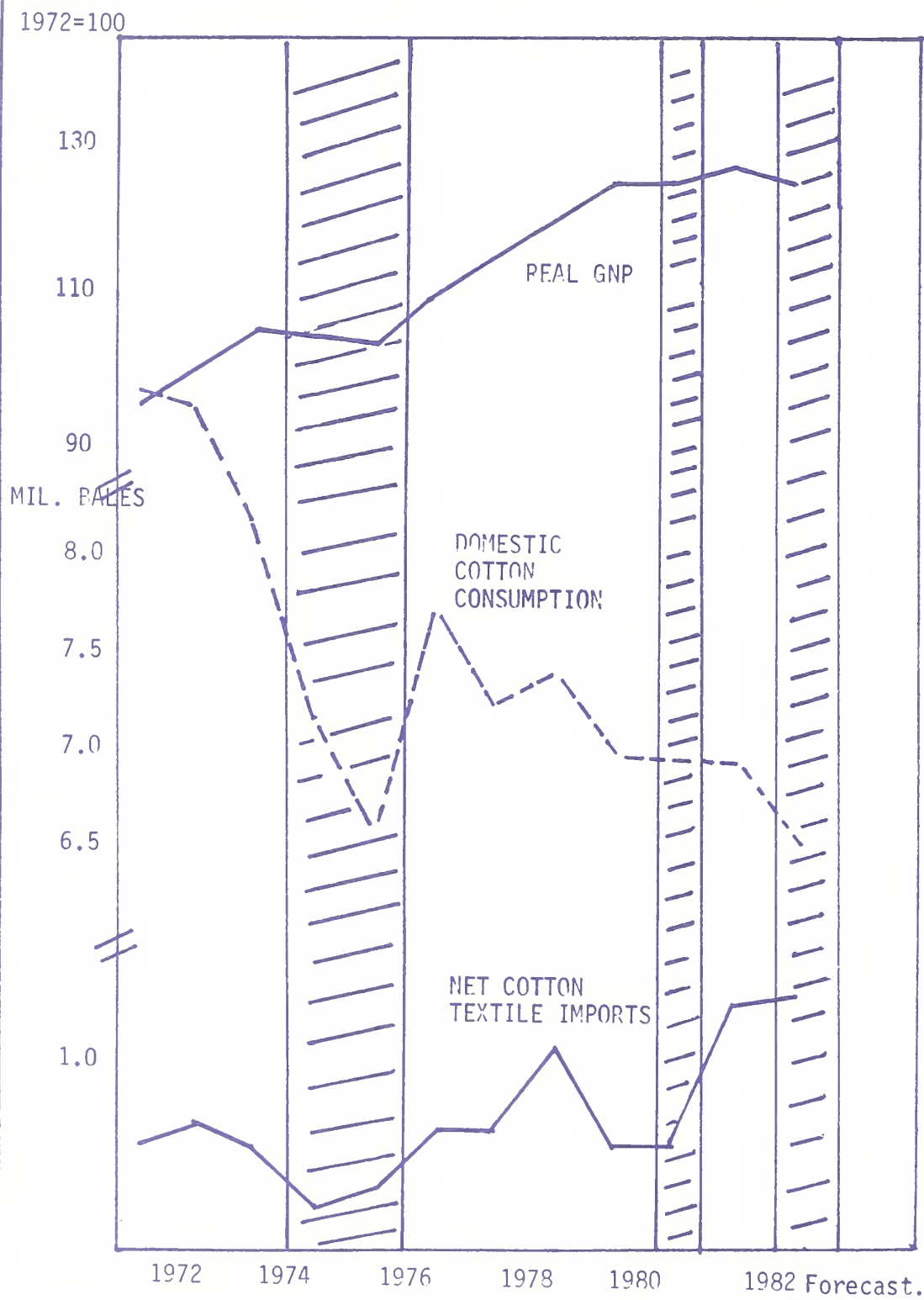


Figure 1

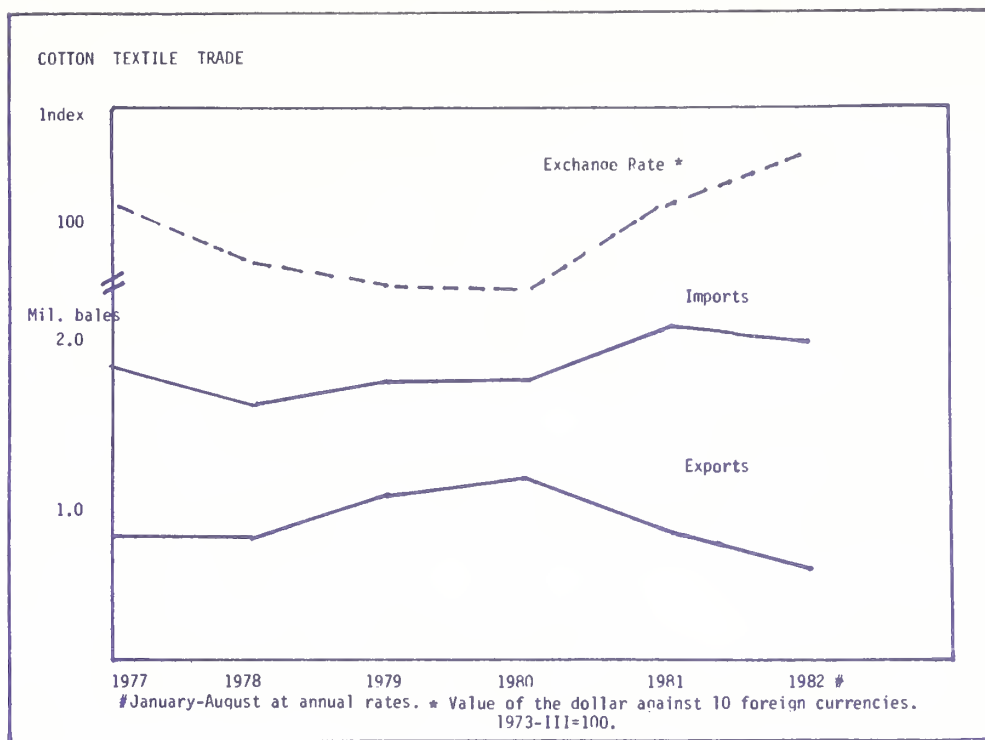


Figure 2

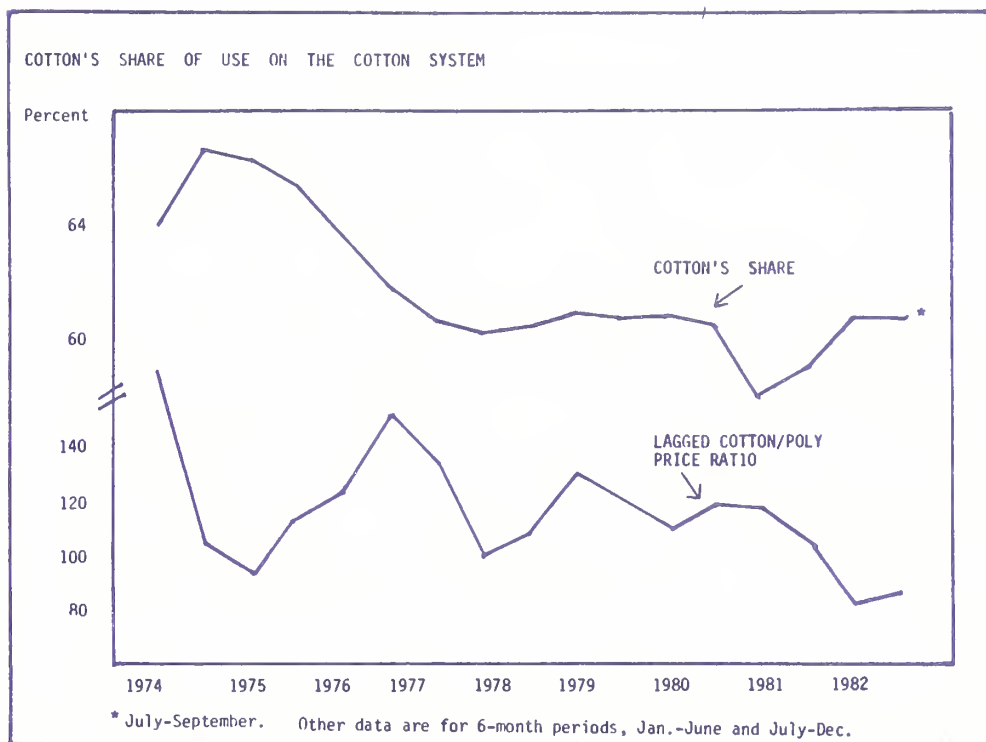


Figure 3

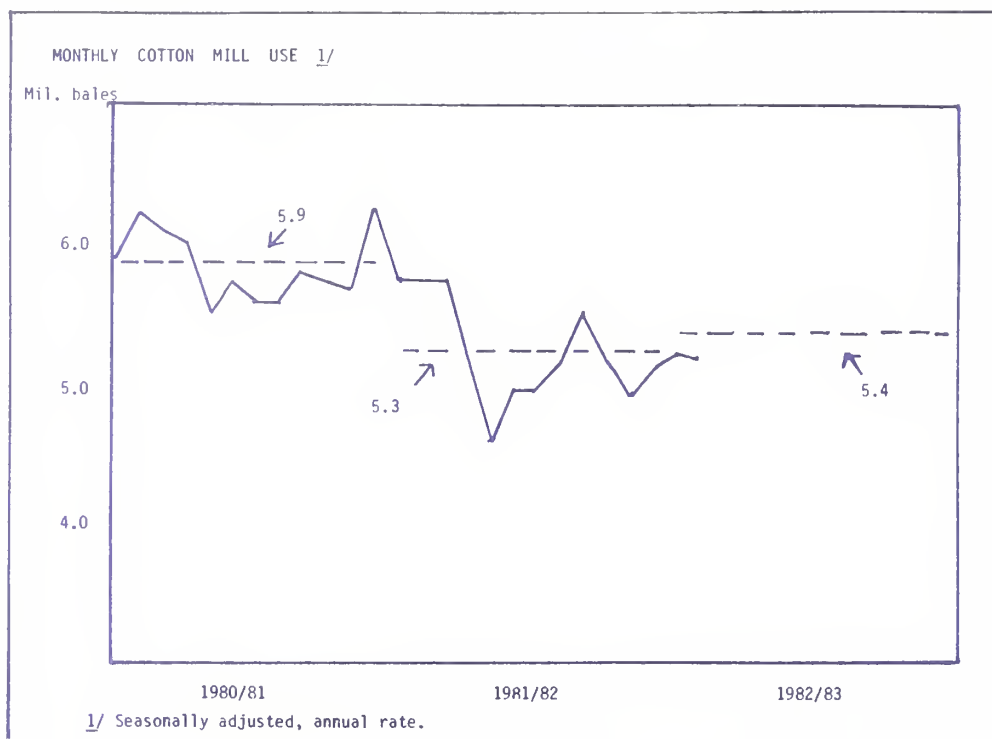


Figure 4

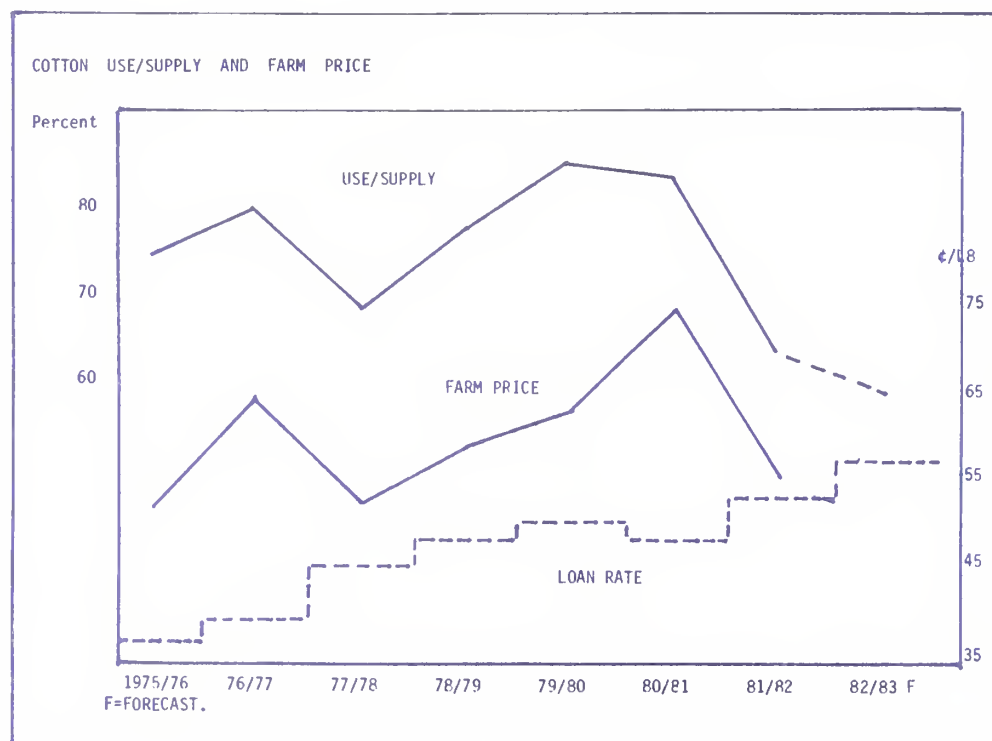


Figure 5

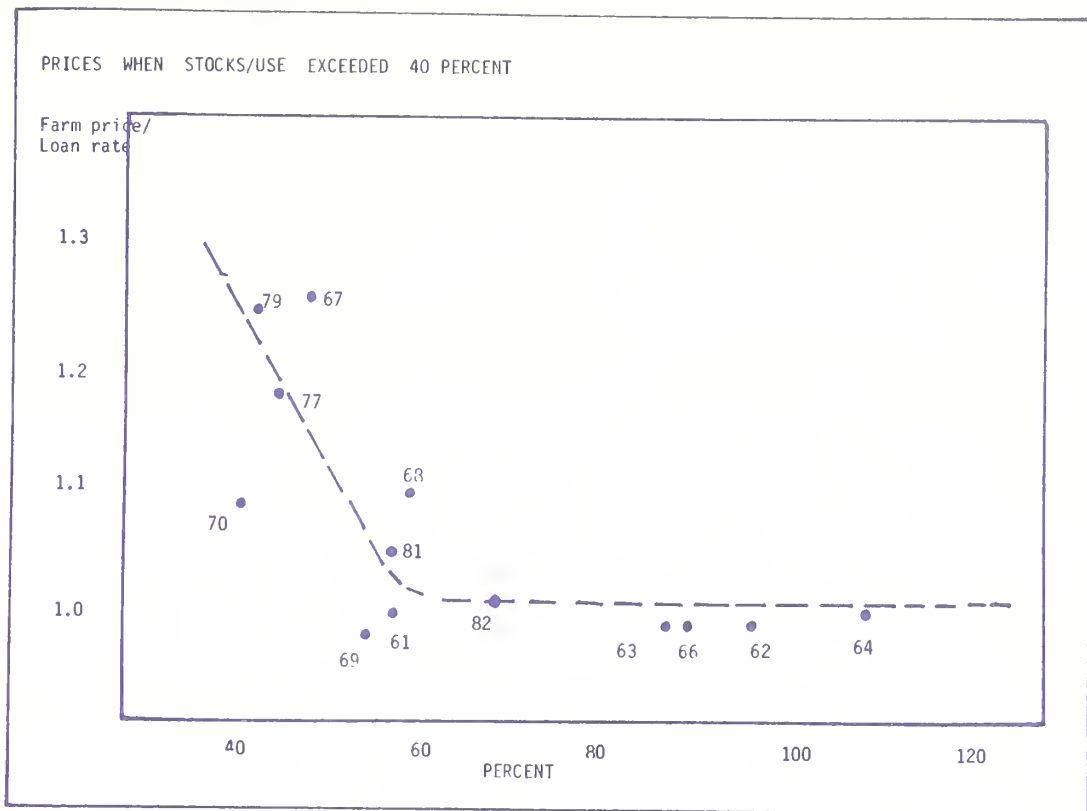


Figure 6

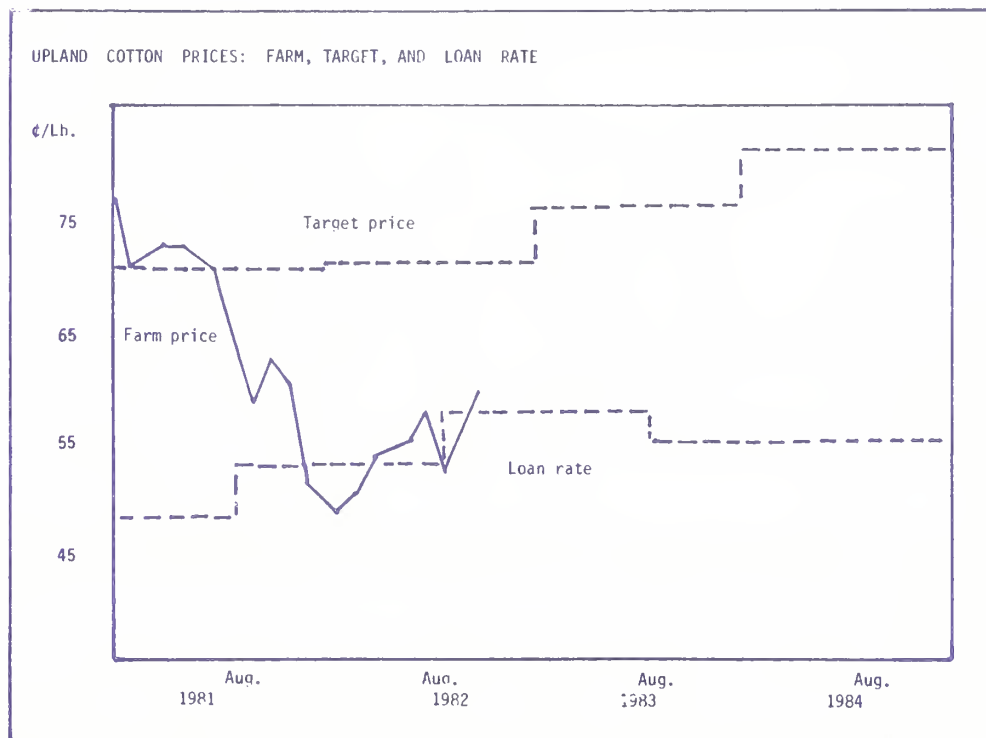


Figure 7

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Milk production for the world's major dairy countries is continuing to expand and dairy surpluses are expected to plague policy makers in many of these countries throughout the 1980's. Although milk cow numbers have trended downward by some 5 percent since the mid-1970's, technological improvements in breeding, feeding, housing, and significant changes in herd structure have resulted in sharp gains in productivity. Yields per cow are up about 15 percent overall with much sharper gains registered in France, India, the United Kingdom, Italy, Ireland, and the United States. Substantial increases in productivity are expected in these countries as well as many others during the next several years.

Increases in consumption of fluid milk and manufactured dairy products have not kept pace with the expansion in milk output. Considerable uncertainty surrounds projections of consumption over the next five years as worsening economic conditions have dampened consumer demand for dairy products. Even with an improved world economic situation which would bolster the upward trend in cheese consumption and increase the use of dairy products in developing countries, the overall outlook is for milk production to grow faster than available outlets.

Many uncertainties cloud the future, such as the need of the USSR to import dairy products on a large scale as they have the past four years. Some observers feel that the USSR and other Eastern bloc countries will continue to have considerable difficulty in producing sufficient dairy and livestock products to meet the demands of their people. If that is the case, then the East European countries may provide an important export market for dairy products over the next several years. However, while poor grain crops and forage dramatically curtailed Soviet milk output during the past few years, some recovery in milk output is apparent this year and the Soviets have ambitious targets for expanding milk production in the future.

Other uncertainties which will impact sharply on world dairy product markets are the willingness of the European Economic Community, the world's largest milk producer and international trader in dairy products, to dispose of heavy supplies of surplus skim milk internally, and the willingness of the United States to continue holding large stocks of butter, cheese, and skim milk powder.

Now for a brief glance at world dairy supplies and the short term outlook for next year. Milk output for the 36 selected countries will total around 387 million metric tons or 853 billion pounds this calendar year, up nearly 1.7 percent from 1981. For 1983, prospects are for a comparable

year-to-year gain of about one and one-half percent. Although annual increases may slow for the European Community and the United States, Soviet milk production appears to be turning the corner on a 4 year down trend.

TABLE 1 - Fluid Cow's Milk Production

<u>Major Producers</u>	<u>1980</u>	<u>1981</u>	<u>1982</u> (Estimated)	<u>1983</u> (Projected)
	(In million metric tons)			
EC-10	104.7	104.8	107.1	108.6
USSR	90.9	88.5	89.5	91.3
United States	58.3	60.2	61.3	62.4
Oceania (Aust./N.Z.)	12.4	12.0	12.0	12.0
Other countries*	114.4	115.1	117.0	118.5
Total	380.7	380.6	386.9	392.8

* Includes 22 other major milk-producing countries.

Stocks of butter and nonfat dry milk (NFDM) have expanded sharply for the European Community and the United States this year. By the end of 1982 world inventories of butter may reach 763 thousand metric tons and nonfat dry milk, 1,392 thousand tons, respective gains of 20 percent and 31 percent from stock levels at the end of last year. Considering the anticipated expansion in milk output next year and the likelihood that demand for dairy products will not strengthen very much, leaves us with the probability that butter and NFDM stocks will continue building in 1983 unless some dynamic measures are initiated to reduce the oversupply.

TABLE 2 - Year End Stocks of Dairy Products*

<u>Country</u>	<u>Butter</u>		<u>NFDM</u>		<u>Cheese</u>	
	<u>1981</u>	<u>1982</u>	<u>1981</u>	<u>1982</u>	<u>1981</u>	<u>1982</u>
	(In thousand metric tons)					
EC-10	240	306	352	424	534	528
United States	195	243	404	608	443	517
Oceania (Aust./N.Z.)	84	94	89	130	62	73
Non-EC West Europe	24	26	24	22	149	139
Japan	41	37	40	42	5	8
Canada	20	34	43	53	61	55
Mexico	-	-	72	80	-	-
Other ^{1/}	30	23	39	33	42	46
Total	634	763	1,063	1,392	1,296	1,366

* Year end stocks for 1982 are estimated

^{1/} Includes 13 other selected dairy product producers.

Currently the EC is moving to reduce its butter and NFDM intervention stocks. The Community may reinstate its export subsidies on butter sales to the USSR which were eliminated in December 1980. Also, the EC plans to subsidize the domestic sale of 120,000 metric tons of Christmas butter this year to the general public as well as an additional unspecified amount for domestic welfare and social programs. Subsidized sales of NFDM for animal feed could also help to reduce the huge surplus stocks of that product.

The United States, meanwhile, is expanding its donation programs to needy persons overseas. Under the P.L. 480 Title II and the recently reinstated Section 416 programs, considerable amounts of NFDM will be shipped abroad. Early estimates indicate that for fiscal year (FY) 1983 foreign donations may be as much as 300,000 metric tons of NFDM compared to 102 thousand tons in FY 1982. Extensive domestic donations to the needy are also helping to curb the burgeoning government stocks. For FY 1982, 64 thousand tons of cheese, 9 thousand tons of butter, and 3 thousand tons of NFDM were distributed under special programs along with the normal program outlets of 79 thousand tons of NFDM to schools, military, V.A. hospitals, prisons, etc. Some expansion in the special donations program in addition to the normal programs is planned for FY 1983.

World Dairy Product Prospects

The world output of butter and anhydrous milkfat (mostly butteroil) for 1982 at 6,099 thousand metric tons is up around 3 percent from a year earlier. However, butter consumption has slackened, resulting in the rise in stocks by year's end. International trading of butter is down this year as exports from the European Community have fallen. In 1981 there was relatively strong demand from the Middle East and Eastern Europe but butter sales to those markets dropped sharply this year. Butter prices on world markets during first half 1982 ranged between \$2,125 to \$2,250 per metric ton, free-on-board (f.o.b.). This fall, prices have been quoted in the \$2,000 to \$2,050 per ton range. For butteroil, prices averaged around \$2,400-2,500 per ton last spring but have since declined along with butter prices. Some of the weakness in butter prices, as with other dairy products, can be accounted for by the appreciation of the United States dollar, but ample world supplies and reduced demand are also factors behind the "softening" in butter prices.

The NFDM picture is even less encouraging. Production this year is up nearly 4 percent from 1981 levels. Although consumption appears to be somewhat higher, stocks are building, particularly in the EC and the United States. International market prices for the skimmed milk powder had reached the \$1,100 per ton f.o.b. level in late 1980 and fluctuated in the \$1,050-1,100 per ton range throughout 1981. During first half 1982, prices declined some \$50 per ton reportedly because of the strengthening in the U.S. dollar. However, by mid-1982 the market seemed somewhat unstable. Prices since then have dropped significantly and currently are being quoted in an \$800-850 per ton f.o.b. range. Purchases of NFDM by such traditional importers as Mexico and Japan appear to have been made at much lower average prices this year than a year ago.

For cheese, world production is up about 3 percent this year and consumption is expected to rise by a comparable amount. Stock levels worldwide will be a little higher by year's end because of the sharp gain in U.S. Government-owned inventories. The outlook for next year is for only a 1 to 2 percent rise in world cheese output and consumption. Prices for cheese have been much more stable on world markets this year than for butter and skim milk powder. International prices for cheddar cheese have fluctuated around \$1,750 per ton f.o.b. since early 1982. Reportedly competition on world cheese markets has increased in recent months as traders look with concern at U.S. stock levels and an indication that the United States is preparing to sell surplus cheese abroad. With the exception of 9,400 metric tons exported to Poland in 1981 and 1982, no CCC stocks have been sold abroad since the mid-1960's.

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Record milk production and a record level of government purchases despite improved commercial disappearance highlight the 1982 dairy situation. Potentially, 1983 presents the same picture. Milk production will be larger and commercial disappearance will likely improve, but USDA will continue to remove large amounts of product from the market.

Milk Price Support: Recent History

Before looking at the outlook for production, use and prices in 1983 let's review the recent history of dairy price supports. The Food and Agriculture Act of 1977 and the 1979 amendment mandated the minimum price support be 80 percent of parity with semiannual adjustments. Early in 1981 legislation was enacted to forego the April 1, 1981 semiannual (mid-year) adjustment in support prices. Thus, the support price on April 1, 1981 was held at the October 1, 1980 level of \$13.10 per cwt for milk with a fat content of 3.67 percent (\$12.80 at 3.5 percent fat) until September 30, 1981. Then the support level was raised (as required) on October 1 to 75 percent of parity--\$13.49 per cwt--because the 1977 Act had expired. Subsequent special legislation, enacted on October 20, allowed the level of support to be "rolled back" to \$13.10.

The December 22, 1981 enactment of the Agriculture and Food Act (Farm Bill) allowed the level of support to be continued at \$13.10 for the rest of the 1981/82 marketing year. In addition, the 1981 Farm Bill set minimum levels of support for the final three years of the bill--\$13.25 for 1982/83, \$14.00 for 1983/84 and \$14.50 for 1984/85. The Act also contained provisions for higher levels of support, 70 to 75 percent of parity, if Government removals and/or costs remained below certain "trigger levels".

On March 22 and 23, 1982, USDA held a public dairy symposium at Kansas City to gather input for drafting recommendations to Congress about changes in the price support program. On May 5 USDA announced an emergency dairy plan to deal with surplus milk production, surplus stocks disposal and improving dairy product demand. Some parts of the plan were to be implemented administratively, but other sections required legislation. The key section being that the Secretary of Agriculture be given discretionary authority to set the price support lower than allowed in the 1981 Farm bill.

During the spring and summer several different bills were introduced in Congress calling for changes in dairy legislation to deal with the surplus milk production and the expanding government holdings of butter, cheese, and nonfat dry milk. The Senate and House held hearings on the

dairy problem and the different bills. The House included dairy provisions in the budget legislation that would override the 1981 Farm bill. Likewise, the Senate also included dairy provisions in its budget legislation--but different from those of the House.

During August the House and Senate worked out the differences between their versions of the budget bill, including the dairy provisions. Enactment of the Omnibus Budget Reconciliation Act of 1982 on September 8 resulted in new dairy legislation. The new law set \$13.10 per cwt as the minimum support price for the marketing years beginning October 1, 1982, and October 1, 1983. For the marketing year beginning October 1, 1984, the minimum support will be the level of parity that \$13.10 represents on October 1, 1983. In addition, effective October 1, 1982, to September 30, 1985, the Secretary of Agriculture may provide that 50 cents per cwt be deducted from the proceeds of the sale of all milk marketed commercially by producers, if net price support purchases for the marketing year are expected to equal or exceed 5 billion pounds milk equivalent. The funds are to be remitted to the Commodity Credit Corporation (CCC) to offset part of the cost of the milk price support program. Effective April 1, 1983, to September 30, 1985, the Secretary may provide for deduction of an additional 50 cents per cwt, if net marketing year purchases are expected to go over 7.5 billion pounds milk equivalent. At the same time, though, a program must be established to refund the second 50-cent deduction to those producers who lower their output by a specified amount.

Today's outlook is based on the assumption that the minimum support level provision of the budget (dairy) law and the deductions are implemented. Thus, the support price that was set on October 1 at \$13.10 per cwt for manufacturing grade milk with 3.67 percent fat (\$12.80 at 3.5 percent fat) will be unchanged until October 1, 1984. This support is the minimum allowed and is the same support price that was put into effect October 1, 1980. In addition, the Secretary of Agriculture will implement a 50-cent-per-cwt deduction for all milk marketed beginning December 1 and a second 50-cent-per-cwt deduction beginning April 1, 1983. The deductions are expected to remain in effect for all of 1983 and 1984.

Milk Prices Below 1981

Prices received by farmers for milk in October were up seasonally from the July level, but were still below a year earlier. The gain from July reflects the higher fat content of October milk compared with July and a higher fluid utilization proportion. The price shortfall from a year earlier was primarily the result of continued surplus production, but also the result of the slightly lower support price. The support level was \$13.49 per cwt for the first 20 days of October in 1981 and then was "rolled back."

October prices for manufacturing grade milk averaged \$12.80 per cwt--up 50 cents (4 percent) from July but 10 cents below a year earlier. The October price of Grade B milk after adjusting to 3.67

percent fat, was \$12.62 per cwt, 48 cents below support. Thus, October marked 31 consecutive months that manufacturing grade milk prices (adjusted for fat content) have failed to reach support.

Prices received by farmers for all-milk reached a seasonal low in June and have risen since--averaging \$13.80 per cwt during October. For first-half 1982, the all-milk price averaged 25 cents per cwt (1.8 percent) below a year earlier. Farm milk prices may rise 10 to 20 cents by December; due to a normal increase in fat content and a higher fluid milk utilization rate caused by seasonally lower production and higher fluid sales. In 1983, the all-milk price is expected to be little changed from 1982. But, the effective returns per cwt received by farmers for milk in 1983 could average 6 percent or more below 1982, given the 50-cent deduction beginning December 1 and the second 50-cent deduction starting April 1.

Feed Prices Lower

The decline in feed ingredient (corn and soybean meal) prices this summer have partly been reflected in lower dairy feed prices. The price of 16-percent protein dairy ration was \$171 per ton during October, down \$12 (6.6 percent) from a year earlier and \$10 below May. This decline in feed costs, coupled with an all-milk price which decreased less--1.4 percent in October--has resulted in a milk feed price relationship of 1.61, the highest value since January 1979.

With the record harvest currently being completed, feed prices likely will show little upward movement and therefore will trail year-earlier levels at least through the first half of 1983. Meanwhile, with farm milk prices expected to show a seasonal decline from January to June, the milk-feed price relationship will move lower, but will remain above this year throughout the first half of next year. However, if the milk price is adjusted to account for the forthcoming 50-cent-per-cwt deductions the milk-feed price relationship moves below year-earlier levels starting next April, but remains above 1980 levels.

Output Gains Continue

Milk production during the second quarter of 1982 increased 1.1 percent from a year earlier. The gain was due to 93,000 more milk cows and a modest increase in output per cow of 7 pounds (0.2 percent) from a year earlier. During the third quarter production was up 2.3 percent, the result of 101,000 more cows and an increase of 42 pounds (1.4 percent) in output per cow. With the number of dairy herd replacements per 100 cows record large on July 1, some additional expansion in the herd will likely occur this fall. In addition, the milk-feed price relationship is expected to continue very attractive for heavy concentrate feeding. Thus, year-over-year gains in output per cow will likely occur. As a result, milk production is expected to continue to increase this fall, as it has since mid-1979. This year's production will be about 2 percent above the record 132.6 billion pounds in 1981.

Dairy farmers' reactions to the December 1 and authorized April 1 deductions will play a key role in determining the size of 1983's milk production. The deductions add uncertainty to other economic factors that point toward additional milk production--low feed prices, large forage supplies, and unfavorable farm and non-farm alternatives. If farmers react quickly to the forthcoming deductions and start to reduce their herds or leave the industry, production late in 1983 could be less than year earlier levels, leaving total output about 1 percent above this year. However, if producers delay reactions until after next spring's flush production period, total 1983 output will show a sizable increase from 1982.

Dairy Product Prices Unchanged

Wholesale prices for butter, cheese, and nonfat dry milk continue stable. They have been nearly unchanged since October 1980 because supplies are more than ample and the CCC support purchase prices are unchanged. In September, the Bureau of Labor Statistics (BLS) index of wholesale dairy prices was 249.3 (1967=100), up only 1.5 percent from a year earlier. Since the support price and the support purchase prices did not increase this fall and the 50-cent deductions have no direct effect on processor costs for milk, wholesale dairy product prices are expected to be near current levels through mid-1983.

Retail dairy product prices are expected to average 1 to 2 percent higher this year than in 1981, because farm-to-retail marketing costs are up more than the decline in farm prices. The September BLS index of retail dairy prices was 247 (1967=100), up 1.1 percent from September 1981. Retail dairy products prices will likely increase somewhat again in 1983, also because of higher farm-to-retail costs.

Use of Milk Improves

Commercial disappearance of manufactured and fluid dairy products during January-September increased 1.7 percent from a year earlier, on a milk-equivalent, fat-solids-basis, a gain of 1.5 billion pounds. Total disappearance for 1982 is expected to be 122 billion pounds, a gain of 1.9 billion pounds and a strong recovery from 1981, but less than expected given the decline in real dairy prices this year. The weak general economy and gains in unemployment were likely the principal causes, but increased domestic donations of dairy products by USDA and the reduced expenditures on school feeding programs probably also had an impact. Commercial disappearance is expected to again be up 1.5 percent in 1983. Real prices of dairy products will likely decline again, next year, but the same factors that slowed the gains in commercial use this year will again be important in 1983.

USDA purchases during 1982 on a milk-equivalent, fat-solids-basis are expected to increase 1.6 billion pounds--partly because of the 2.6 billion gain in production compared with the gain in use of 1.9 billion, but mostly because of a reduction in commercial stocks of nearly 1 billion pounds. With commercial disappearance projected to improve in

1983, but with some gains in milk production expected, little reduction in the level of USDA purchases is likely. Government stocks as purchases exceed donations, in 1983 will continue to expand.

To recap, the dairy industry can expect 1983 to be similar to this year. Milk production will likely increase enough to offset a gain in commercial use, thus USDA removals will remain large and keep farm milk and retail dairy product prices near year-earlier levels.

Table 1--Dairy summary, 1980-82

Item	Unit	1980	1981	1982	Percent change 1981-82
			Annual 1/		
Milk production	Bil. lb.	128.5	132.6	135.1	+1.9
Milk per cow	Lb.	11,889	12,147	12,252	+0.9
Number of cows	Thou.	10,810	10,919	11,024	+1.0
Milk prices: All-milk	Dol./cwt.	13.00	13.80	13.55	-1.8
Manufacturing grade	do.	12.00	12.70	12.65	-0.4
Cash receipts	Mil. dol.	16,605	18,106	18,226	+0.7
Value of dairy rations	Dol./cwt.	7.42	8.05	7.45	-7.5
Milk-feed price ratio	Lb.	1.48	1.44	1.54	+6.9
Utility cow prices, Omaha	Dol./cwt.	45.73	42.01	39.85	-5.1
			January-September		
Wholesale prices:					
Butter (Chicago, Grade A)	Ct./lb.	136.6	147.6	147.6	0
American cheese (Wisconsin assembling points, 40-lb. blocks)	do.	130.5	139.1	137.6	-1.1
Nonfat dry milk (High heat, F.O.B. Central States)	do.	86.73	93.00	93.13	+0.1
Dairy products (BLS)	1967=100	227.4	245.1	248.5	+1.4
USDA net removals:					
Butter	Mil. lb.	207.6	307.1	337.7	+10.0
American cheese	do.	307.5	489.8	525.4	+7.3
Nonfat dry milk	do.	524.2	676.8	779.0	+15.1
Evaporated milk	do.	11.8	14.6	15.5	+6.2
Milk equivalent	do.	7,351	11,212	12,198	+8.8
Retail prices (BLS): 2/					
All foods	1967=100	251.3	273.6	285.3	+4.3
Dairy products	1967=100	224.8	243.1	246.8	+1.5
Manufactured products output:					
Butter	Mil. lb.	865.6	925.8	963.7	+4.1
American cheese	do.	1,806.5	1,997.4	2,059.0	+3.1
Other cheese	do.	1,172.8	1,193.9	1,268.4	+6.2
Nonfat dry milk	do.	929.2	1,022.9	1,100.4	+7.6
Canned milk	do.	562.2	564.4	553.9	-1.9
Cottage cheese	do.	639.4	597.0	573.9	-3.9
Ice cream	Mil. gal.	653.0	651.5	663.5	+1.8
Ice milk	do.	237.3	236.0	233.9	-0.9
Imports of dairy products:					
Total milk equivalent	Mil. lb.	1,230	1,453	1,786	+22.9
Commercial disappearance:					
Total milk	Mil. lb.	88,945	89,650	91,140	+1.7
Butter	do.	641.0	621.6	653.0	+5.1
American cheese	do.	1,488.0	1,567.1	1,610.8	+2.8
Other cheese	do.	1,284.3	1,341.9	1,412.1	+5.2
Canned milk	do.	507.6	504.2	485.9	-3.6
Nonfat dry milk	do.	426.1	346.2	319.6	-7.7
Fluid sales in Federal order markets:					
Whole milk	Mil. lb.	15,071	14,443	13,980	-3.2
Low-fat milk	do.	10,796	11,140	11,262	+1.1
Total	do.	25,867	25,583	25,242	-1.3

1/ 1982 estimated. 2/ For all urban consumers.

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TRANSPORTATION

Over the past 10 years, the demand for agricultural transportation has grown more volatile, largely reflecting changes in export demand for U.S. grain. This volatility created difficulties in adjusting the transport supply to meet anticipated demand. As export demand leveled off in the past 2 years, the result has been an oversupply of transportation capacity in the United States. Thus, transportation should be readily available in 1983, as total movements of agricultural commodities drop 2 percent. Further, the Nation's transportation system is expected to be adequate to handle projected export volume through 1990.

The aggregate demand for agricultural transportation service is derived from the sale of farm inputs (such as machinery, feed, and fertilizer) plus the domestic and export sales of crops, livestock, and livestock products. Preliminary data for 1982 indicate that major agricultural commodity movements totaled about 504 million metric tons, a jump of about 82 million tons since 1978 and 166 million tons over the average of 1970 and 1971. Feed grains (corn, barley, sorghum, and oats), wheat, and soybeans and products account for nearly two-thirds of the total 1982 movements.

Export Fluctuations Created Shortages in 1970's, Then Surplus

Total movements for agricultural exports are expected to reach 146 million metric tons in 1982, up 15 percent from 1978 and 135 percent above the 1970-71 average. Grains and byproducts accounted for 95 percent of the 1982 agricultural export movement.

Although the U.S. transportation system has been able to accommodate shippers of U.S. farm exports, there have been problems in matching the transport supply with changes in demands during a given year. In 1973, for example, grain exports surged 50 percent as a result of the initial Russian wheat sale. This triggered a period of equipment shortages lasting nearly 2 years. The volume of grain exports dropped 18 percent in 1974, rose 10 percent in 1975, and then leveled out for a few years.

In 1978, grain export volume increased by 25 percent over 1977, growing an additional 9 percent in 1979 and 8 percent in 1980. This led to serious transport-equipment shortages until the spring of 1980. Following this 3-year growth period, carriers and shippers--believing that strong export expansion would continue--rapidly expanded transport capacity. This rapid equipment expansion continued through 1981, while grain exports leveled out. As a result, a surplus of equipment developed that will probably continue for a number of years.

More Grain Moving Through Gulf Ports

The flow of grain to ports for export changed significantly during 1982. In the first 9 months of the year, 68 percent of all grain exports moved through Gulf outlets, compared with 61 percent during all of 1981. The only other port area to increase its share was the Atlantic Coast which rose from 10 percent in 1981 to 12 percent in 1982. Movements through the Great Lakes fell 2 percent in 1982 to a total share of 6 percent, while West Coast movements dropped 4 points to a 14 percent share. Declines through the Lakes and the West Coast resulted partly from lower corn exports; depressed barge rates also contributed by attracting traffic from points more distant from the rivers.

Barges Taking Large Share of Grain Movement

From 1975 to 1982, barges' share of total grain movements rose from about 13 percent to 22 percent, eroding part of the railroads' and motor carriers' share. A surplus barge supply has depressed barge rates, enabling water carriers to compete more vigorously for grain traffic during 1982. In addition, significant reductions in nonagricultural traffic on the Mississippi River system freed locks to grain traffic and facilitated movements on this system.

However, the trend toward more barge traffic may weaken in the longer-term future. This would happen if, as expected, further expansion of grain production occurs mainly in States not immediately accessible to inland waterway transportation.

The railroads' share of grain traffic has averaged close to 40 percent during the past 8 years. Pricing flexibility, along with other deregulation provisions resulting from the Staggers Rail Act of 1980, may enable the railroads to improve their competitive position in grain traffic over the next several years.

Motor carriers' share of 39 percent in 1982 was down from 46 percent in 1975. Truckers typically haul grains much shorter distances than railroads or barges. The operational and pricing flexibility of motor carriers should enable them to maintain their present share of grain movements, at least on the bulk of the domestic hauls.

Barges' Share of Grain Traffic Rising

	1975	1976	1977	1978	1979	1980	1981	1982
Railroads <u>1/</u>	41.3	41.9	37.1	39.0	37.6	48.9	39.5	39.2
Barges <u>2/</u>	12.6	15.8	17.9	17.9	16.5	21.1	19.1	22.1
Motor carriers <u>3/</u>	46.1	42.3	45.0	43.1	45.9	30.0	41.1	38.7

1/ "Freight Commodity Statistics of Class I Railroads" and one percent waybill statistics from Interstate Commerce Commission and U.S. Department of Transportation. 2/ "Grain Market News", Agricultural Marketing Service, USDA. 3/ Estimates were derived by subtracting railroad and barge shares sold off the farm, but excludes truck hauls to rail or barge sidings.

For fresh fruits and vegetables, trucking dominates domestic movement -- carrying about 88 percent of total tonnage in 1982. The total rail share has ranged from 10 to 12 percent during 1978-82, even though the mix of rail movements has shifted from 94 percent mechanical railcar, 6 percent TOFC (trailer-on-flat-car) to 59 percent railcar, 41 percent TOFC.

Trucks Still Dominate Fresh Fruit and Vegetable Shipments

	1978	1979	1980	1981	1982
-----Percent share of total-----					
Truck.....	88.80	90.27	89.93	88.61	88.18
Rail.....	10.41	8.88	8.58	8.32	6.95
Trailer-on-flat-car (TOFC).....	0.68	0.75	1.40	2.98	4.74
Other modes.....	0.11	0.10	0.10	0.09	0.14

Source: USDA, Fresh Fruit and Vegetable Shipments, FVUS-7, 1981 and 1982.

Notes: 1982 data is through October 30. Data may not add because of rounding.

Outlook for 1983 and Beyond

The movement of agricultural commodities in 1983 are expected to total about 515 million metric tons -- about 11.5 million, or 2 percent, over 1982's volume. Nearly all of the increase is concentrated in soybeans and feed grains. Soybeans, for example, are projected at about 61 million metric tons in 1983, up by 8 million tons from 1982. Feed grain movements are expected to increase to about 172 million, up nearly 3 million tons. Other increases ranging from 1 to 2 million tons are forecast for fruits and vegetables and milk and products.

Total agricultural exports are projected at about 149 million metric tons, up less than 2 percent from 1982. Total exports of wheat, feed grains, and soybeans are expected to rise slightly, to about 2 million tons, or 2 percent from 1982.

Beyond 1983, growth in the total agricultural commodity movement, including exports, is expected to resume as the world economy improves -- strengthening demand for U.S. grain. Adequate transportation equipment should be available to fully meet these increased demands through 1990.

Current Transportation Issues

There are a number of major transportation issues facing the Nation's agricultural shippers and carriers with the impacts currently being felt or expected to be felt in the near future. While time does not permit a discussion of all such issues, among the more important of these are the following: the proposed expansion of the farm products exemption by rail, the uncertain impacts resulting from rail mergers and consolidations, the deterioration of rural roads and bridges, coupled with branchline abandonments, and greater application of transportation user fees.

Proposed Rail Exemption to Include Additional Farm Products

The Interstate Commerce Commission has proposed in a recent proceeding, Ex Parte No. 346 (Sub No. 14), to exempt the interstate transportation by rail of all farm products (Standard Transportation Commodity Code No. 01) not previously exempt, with the exception of grain and soybeans. The latter two commodities were not declared exempt, because, in the Commission's views, the large volume of rail movement would require separate treatment.

This latest proposal to exempt rail transport of farm products is the fourth in the past 3 years. The first rail exemption of agricultural commodities moving in interstate commerce was authorized in May 1979, and included fresh fruits, or tree nuts, and fresh vegetables (Ex Parte No. 346). Additional raw, unprocessed commodities were exempted from rail transport in March 1980 and May 1981 and included among others: seeds, plants, peanuts, potatoes, and bananas (Ex Parte No. 270 various subs). In March 1981, rail TOFC/COFC (trailer-on-flat-car and container-on-flat-car) service hauling farm commodities were declared exempt (Ex Parte No., 270 Sub No. 5).

This contemplated expansion of exempt commodities applies nationwide and covers all rail carrier obligations, including economic regulation (rates and service). The Commission describes its action as one designed to provide the railroads with full flexibility to compete with the unregulated motor carriers which have captured the predominant share of the agricultural commodity traffic. Among the commodities proposed to be exempt are: cotton, oil kernels, nuts and seeds, leaf tobacco, sugar beets, sugar cane, livestock, dairy farm products and animal fibers, poultry and products and miscellaneous farm products. With the possible exception of sugar beets, cotton and oil kernels (primarily sunflower seeds with the exclusion of soybeans), the other exempt commodities do not presently represent a significant share of the railroad traffic. Rail revenue freight originated for the proposed exempt commodities totaled 115,739 carloads in 1981, which is equal to 7 percent of the total carloads of all farm products in the STCC No. 01 category. The aggregate carloads of sugar beets, cotton and oil kernels accounted for 86 percent of the 1981 carloads of the proposed exempt commodities.

Among the commodities which the railroads will probably seek to increase their share of traffic are sunflower seeds and cotton. Both of these

commodities involve long-haul movements, in contrast to sugar beets which are largely short-haul. Sunflower seeds move primarily in the export trade from origins in North and South Dakota and Minnesota to Mexican border points, as well as to shorter haul Great Lakes ports, while cotton moves primarily from California and Texas origins to the southeast for domestic use, and from Texas to California for export.

Although the findings in Ex Parte 346, Rail General Exemption Authority is a full Commission decision, the public is invited to comment on any farm products not already exempt, which might have been overlooked and would warrant an exemption, excluding grains and soybeans. Within USDA, the Office of Transportation is contacting the agricultural shipping public to determine their reaction to the proposed decision, while at the same time, OT is examining the decision's impact upon Commodity Credit Corporation - owned commodities.

The major concern expressed by a number of the agricultural shippers contacted thus far is that the ICC will complete the deregulation of all farm products moving by rail by exempting whole grains and soybeans. This concern is associated with the operations of agricultural grain and soybean shippers who are served by a single rail carrier. Under this condition, freedom of the carrier to set its own rates and service standards might place the shippers in a precarious position with the carrier.

Rail Mergers and Consolidations

The Nation's railroad system and corporate structure has been recently undergoing some very substantial changes through consolidations and mergers which are expected to impact strongly upon the rail industry itself and the shipping public it serves.

Dating from November 30, 1979, the Interstate Commerce Commission has handed down decisions on nine major railroad merger cases. Four of these are: ^{2/}

- Burlington Northern, Inc., granted control and merger with St. Louis-San Francisco Railway Company, March 25, 1980
- CSX Corporation granted control over the Chessie System, Inc., and Seaboard Coast Line Industries, Inc., September 23, 1980
- Norfolk Southern Corporation granted control over Norfolk and Western Railway Company and Southern Railway Company, March 19, 1982
- Union Pacific Railroad Company granted control over the Missouri Pacific Corporation and Missouri Pacific Railroad Co., et al., September 24, 1982.^{3/}

^{2/} Much of the information in this section is from an unpublished report authored by Lee Gardner of the Interstate Commerce Commission's Rail Services Planning Office, October 1982.

^{3/} Proposed transaction is not consummated.

This recent wave of mergers is the direct result of the passage of two pieces of legislation: the Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act), which sought to encourage consolidations in order to rationalize the Nation's rail system; and the Staggers Rail Act of 1980 which refined the 4R Act by lessening the merger requirements and speeding up the process.

A characteristic of most rail mergers since the 4R Act is that they have been predominately end-to-end, in contrast to the parallel mergers which occurred prior to the Act. A simplified example of an end-to-end merger is where railroad X serves the territory between points A and B, while railroad Y's service territory extends from points B to C. With a merger of the two railroads, the combined territories can be served by longer single-line movements, with improved service the result. At the same time, end-to-end mergers open up new markets, while maintaining competitive influences in existing markets.

In some cases, however, end-to-end mergers may lead to concentration of market power as competitors are forced to curtail operations or to close down completely. In view of the possible adverse consequences resulting from mergers, USDA's Office of Transportation participates in rail merger proceedings so as to seek assurance that viable competitive rail carriers serving agricultural interests will continue to be able to do so by having access, for example, to particular gateways, or to participate in new routes and joint rates published by the merged system. Hopefully, the streamlining of the rail system through consolidations will result in greater efficiencies which will benefit both the carriers and the shipping public.

The short-term outlook is that additional rail mergers and consolidations will occur, but at a less rapid pace than that of the past 3 years. The Interstate Commerce Commission reports that a merger proposal involving the Grand Trunk Western - Detroit, Toledo, and Ironton and the Milwaukee Road is expected to be filed between November 5, 1982, and February 5, 1983. It is also anticipated that a merger proposal will eventually be forthcoming from one of the large eastern rail systems and one of the large western rail systems.

The Nation's railroad system is now comprised of seven very large companies, three in the East and four in the West; 10 regional carriers and a number of short lines.^{4/} In the longer run, one may see the Nation's rail network composed of perhaps five giant transcontinental firms with appropriate feeder lines.

Rural Roads and Bridges and Rail Abandonments

Heavy reliance on the rural road network has generated widespread concern about the adequacy of this system to transport products and people into, out of, and within rural areas. This is not an idle concern because of the very

^{4/} The seven large companies assume the consumation of the recently approved UP-MP-WP.

vastness of the rural road network and its generally deteriorating condition. In 1980, the rural road system contained 3.2 million miles, and accounted for 84 percent of the Nation's total vehicle miles of travel. The rural system, as classified by the Federal Highway Administration, includes all roads outside of populated areas of more than 5,000 people. Only 20 percent of the rural mileage, however, was on the interstate, primary and secondary Federal-aid system in 1980, and this condition prevails today. The great bulk of the rural road mileage is thus wholly dependent upon state and local support.

But whether on or off the Federal-aid system, well over half of the total rural road mileage is reported by the Department of Transportation to be structurally inadequate by reason of surface type and condition and/or safety deficiencies. By 1995, DOT expects that 80 to 99 percent of rural road mileage, depending upon classification, will require surface replacement.

An even more serious problem than the road surface is that of the condition of rural bridges. Of 514,000 bridges reported in the national bridge inventory of 1980, about 200,000 were reported as deficient with over half of these located on roads off the Federal-aid system.

Rural transportation needs have changed considerably since the 1930's when most of the rural road system was built. The shipment of heavy and frequent loads of agricultural commodities on roads not designed for such purposes can only aggravate the serious problem of road deterioration that already exists. Often, however, no option exists for agricultural producers to move their products except by truck. This is especially so as a result of the extensive rail branchline abandonments which have occurred in recent years.

Within the last 10 years, the number of miles of track approved for abandonment by the ICC has increased significantly. Whereas in a 3-year period from 1973 through 1975, Commission-approved abandonments averaged 1,125 miles per year, in the most recent 3-year period from 1979 through 1981, an average of 2,690 miles per year were approved for abandonment. Preliminary data for the first 8 months of 1982 indicate that this trend is continuing as total mileage granted during the year will greatly exceed the 1979 - 1981 average (3,188 miles had been approved for abandonment through August 8).

Much of the mileage abandoned in the last year have been the result of Conrail applications under the Northeast Rail Service Act (NRSA) which granted Conrail special abandonment privileges for applications filed before December 1, 1981.

There is little question that a feasible solution to the rural road and bridge problem is going to require a combination of actions at different levels of government. During fiscal year 1983, the Department of Agriculture is cooperating with the Rural Governments Coalition in an effort to help local and State governments increase their capacity to maintain and improve public government, as well as the private sector.

Transportation User Fees

Among factors which will undoubtedly influence the competitive position of the different transportation modes and ultimately shift some of the increasing agricultural demand for transportation services are the current proposals for user fees on the inland waterways, the ports, and the highway infrastructure.

The first user tax on commercial users of the inland waterway system was instituted at 4 cents per gallon of fuel on October 1, 1980 with provisions for regular increases up to 10 cents per gallon to be reached in 1985. At that level, approximately 20-25 percent of the Federal Government expenditures on commercial navigation would be recovered.

The current Administration's proposal on inland waterway user charges calls for increasing waterway user charges to recover 100 percent of Federal Government expenditures on commercial navigation. Generally, the impact of user charges to reflect 100 percent cost recovery on agricultural grain flows and transport costs will vary widely depending on the type of tax, whether fuel or segment, location of the grain and the railroad rate response. A recent study has estimated 100 percent cost recovery would require a fuel tax of 32.4 cents per gallon in 1985 and 38.1 cents per gallon in 1990.^{5/} Estimated segment specific taxes projected by the study vary greatly depending on river segment and rail rate response. User charges have been estimated to divert between 9.4 and 18.0 percent of barge grain traffic to other modes depending on the type of the tax and the railroad rate responses. Agriculture, as a whole, is projected to incur lower costs with a fuel tax than a segment tax.

The competitive position of different ports throughout the United States and agricultural shippers using these ports may be affected by an imposition of a 100 percent cost recovery user charge on future harbor dredging and channel improvements.

One of the issues being raised regarding the imposition of a port user fee is whether it should be levied on a uniform basis for all ports, or on a site specific basis. In the latter case, the amount of the user fees would be related to the costs of future harbor dredging and channel improvements at each of the ports, rather than to the combined costs of all ports for these improvements.

USDA's position on both the inland waterway fees and the port fees is that they should be equitable to the agricultural shippers utilizing these facilities. In the case of the inland waterways, the Department favors a uniform fee for all users, while for ports it favors a site specific fee. Its choice of a site specific fee stems from the fact that the coal export ports are discussing the need for harbor and channel deepening in excess of 45 feet, while the grain ports have no difficulty serving their trade at more conventional depths. The costs of this greater depth should thus be repaid by the coal shippers and others who have such needs.

^{5/} Beaulien, Hauser and Baumel, "Inland Waterway User Taxes: Their Impacts on Corn, Wheat and Soybean Flows and Transportation Costs", Proceedings of the Transportation Research Forum, 23rd. Annual Meeting, New Orleans, La., 1982.

Highway user fees have been the prime source of financing the Nation's Federal-Aid Highway System for more than 20 years. In recent years, however, revenue shortfalls have been experienced due to active conservation measures and the weakened state of the national economy. While highway rehabilitation and maintenance costs have risen steadily over the years, the Federal fuel tax has remained unchanged since 1959 at 4 cents per gallon.

Given this state of affairs, Transportation Secretary Drew Lewis submitted a proposal to the Cabinet Council on Economic Affairs on November 10, 1982, calling for a 5 cent a gallon user fee. The proposal contains a recommendation that the revenues estimated at \$5.5 billion annually be used toward rehabilitating the Nation's roads, bridges, and mass transit. The Federal user fee on fuel will have an immediate impact in that it will increase the costs of exempt and private motor carriers who haul by far the bulk of the fresh fruits and vegetables, poultry and eggs, milk and products, and over 40 percent of the grain. At the same time, the initiation of a program to rehabilitate the Nation's roads and bridges will be beneficial to these same truckers, but with a more gradual impact.

IMPACTS OF RAILROAD DEREGULATION ON AGRICULTURE
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On October 14, 1980, President Carter changed the century old federal system of regulating railroad companies when he signed the Staggers Rail Act of 1980 into law. Prior to this Act, the Interstate Commerce Commission (ICC) had the authority to approve and disapprove many railroad decisions including rate-making, rail car allocations, abandonments, reciprocal switching and routing agreements, and mergers. In addition, the regulatory system prohibited railroads from engaging in some activities such as contracting with shippers and receivers.

The declining levels of railroad earnings and the bankruptcy of the Rock Island and Milwaukee railroad companies led Congress to believe that the high level of federal control would cause the railroad system to continue to decline and more railroad companies would become bankrupt. The Staggers Rail Act of 1980 substantially reduced but did not totally eliminate federal control over railroad activities. But, railroad pricing and service freedoms were increased significantly. Using the powers granted by the Staggers Act, the ICC has lifted all regulation of rail transport of several agricultural commodities including fresh fruits and vegetables. The ICC recently proposed lifting all federal regulation on rail movements of several other commodities including cotton, livestock, dairy and poultry products. Generally, only small quantities of these exempt or proposed exempt commodities are transported by railroads. Grain and soybeans are not included in the proposed list of exempt commodities.

In the debate that preceeded the passage of the Staggers Rail Act, many agricultural interests expressed fear that a reduction in federal controls

would allow railroad companies to abuse small, captive agricultural rail shippers. They believed that farmers would bear the burden of these abuses. Fears were expressed that railroad companies would use monopoly power to raise their rates dramatically and reduce service in the so-called captive agricultural regions that do not have access to barge transportation.

In the fall of 1981, seven U.S. senators asked the USDA to make an assessment of the impact of the Staggers Rail Act on agriculture. The Office of Transportation of the USDA, assisted by a group of seven land grant university professors--including the author of this article--made the assessment in the spring of 1982. The following is a summary of the findings of this assessment.

I. Level of Rail Rates. The study team examined the changes in grain rail rates during the period one year before and 18 months after the enactment of the Staggers Act. During the 12 months before Staggers, almost all rail rate changes were upward. Following Staggers, some rail rates increased. However, many rail rates declined. Some rates declined by over 40 percent from the levels in effect on October 1, 1980. The most dramatic changes in rail rates occurred in the central and upper Great Plains and Pacific Northwest states.

During the year prior to Staggers, rail rates on corn and soybeans from Cornbelt states increased approximately 35 percent. After the enactment of Staggers, some rail rates to Gulf ports declined 30 to 45 percent. In addition, some single car rates to processors declined as railroads attempted to stay competitive with trucks,

- II. Types of Rail Rates. Prior to the Staggers Act, only the Cornbelt states have had access to the full range of lower cost multiple car and unit grain train rates. Most of the major wheat producing regions had access only to high cost single car rates. Whether attributable to the Staggers Act or not, 1981 marked the beginning of a new generation of rail grain rates in the central and upper Great Plains and in the Pacific Northwest. In 1981, several railroad companies published several multiple-car and unit grain train rates on wheat to export ports. These rates included 5-, 25-, 26-, 30-, 50-, 52-, 54-, 65- and 75-car shipments. Rate reductions on these multiple-car and unit-train rates ranged up to 20 cents per bushel.
- III. Rail Contract Rates. The Staggers Act legalized the use of contracts between railroads and shippers. Since October 1, 1980, the Interstate Commerce Commission has received almost 800 contracts. By early 1982, only slightly over 50 contracts had been filed on grain shipments. One of the major shipper complaints regarding contracts was that within a short time after a contract was signed, regular rates often declined below the contract rate levels.
- IV. Impact on Small Shippers. The study indicated that, in general, small and medium size grain shippers have "not suffered in relation to larger terminal elevators." The study indicated that "rail rate innovations have been dispersed broadly over all classes of grain firms."
- V. Impact on Grain Marketing. The most important effect of the Staggers Act on grain marketing is the increase in direct marketings from country elevators to export ports and domestic users,

and an increase in the number of elevators loading multiple-car and unit-train shipments. Shippers have been forced to search out more rail routes and markets and to assume more risks.

The study uncovered obvious, and in some cases, dramatic changes in the types and levels of rail rates available to grain shippers since the passage of the Staggers Act. Whether all of these changes can be attributed to the Staggers Act is uncertain because several other dramatic changes occurred at about the same time as the passage of the Staggers Act. Some of these changes include:

- a. Major increases in rail car and barge numbers
- b. No growth in grain exports
- c. Reduced levels of all types of rail traffic

It can be argued that the depressed traffic levels and a large surplus in rail and barge transportation capacity are the catalysts behind the rate reductions and new types of rail rates. On the other hand, it can be argued that while these economic conditions are the forces behind the rail rates and service innovations, it took the regulatory "green light" of the Staggers Act to encourage the railroads to innovate.

Most shippers believe that railroad companies need much of the pricing and service freedom granted by the Staggers Act. However, many shippers believe that revisions should be made in the manner in which the ICC is implementing the Act. The following list of suggestions for improving the working of the Staggers Rail Act of 1980 were made by shippers in the U.S.D.A. assessment:

- I. The ICC has authority to decide which railroad contract information is released to the public. For agricultural movements, the contract summary released to the public must show the names of

the participating carriers, the commodity, the base rate, the origins and destinations, the duration of the contract, annual tonnage requirements, the number of cars dedicated to the contract, the size of the shipments, and a certified statement that cars used for all contracts do not exceed 40 percent of total capacity for that car type. Carriers are not required to specify special contract features such as rate discounts, credit terms, minimum percentage traffic requirements, car supply guarantees and transit time commitments. Agricultural shippers can file a complaint on the grounds of unreasonable discrimination if they have been denied the opportunity to enter into a similar contract at the same time. In general, agricultural shippers believe that the the ICC is not releasing sufficient information to form judgements of discriminatory practices. Shippers believe that the ICC should expand the type and amount of information it releases on rail contracts, or assume the responsibility for ensuring that rail contracts are non-discriminatory.

- II. The ICC has discretionary authority to prohibit the unilateral cancellation of a joint rate by a railroad if a shipper demonstrates that no competitive alternative exists and that the revenue to the cancelling carrier is 110 percent or more of its variable costs. Shippers believe that, in cases where evidence of the above criteria exists, the ICC should prohibit the cancellation of the joint rate. Shippers believe that the ICC should take a more balanced view of shipper and carrier interests in such circumstances,

- III. The ICC has discretionary authority to require railroads to engage in reciprocal switching agreements and to establish conditions and compensations applicable to such agreements, if the switching railroads do not agree. Shippers argue that if railroads cannot, on their own, successfully negotiate such an agreement and if the ICC determines that an agreement is practicable and in the public interest or is necessary to promote competition, the ICC should conclude and enforce switching agreements.
- IV. Because of the complex nature of rail cost information needed by shippers in initiating cases of alleged rail market dominance, there is need for an organization to provide information to assist agricultural and other shippers in understanding and estimating railroad variable costs. Shippers believe that the ICC, USDA and other appropriate agencies should develop and distribute such materials, including methods and procedures to permit individual shippers to estimate railroad variable costs.
- V. There is considerable concern among shippers regarding the application of product and geographic competition tests in determining market dominance issues. Shippers believe that the product and geographic competition tests should be eliminated from market dominance decisions. As a minimum, the potential consequences for shippers of such tests, including the question of the ability of shippers to prove the absence of competition, should be examined along with alternative definitions of market dominance.
- VI. Rapid rail rate changes reduce the predictability of future rate levels. Frequently, grain sales are made weeks or months in advance of the delivery date. The grain industry makes forward

sales based on assumed levels of transport costs. The provisions of the Staggers Rail Act allowing rapid rate changes create increased risks for shippers making forward sales. Shippers argue that some method is needed to allow hedging against rapidly changing rail rates to enable grain sellers to quote more realistic bids for future deliveries. The Staggers Act does permit railroads to enter contracts that set future rail rates.

However, grain shippers argue that contracts on grain are of a limited value in solving this problem. Shippers suggest an examination of alternative methods which will permit railroads and shippers to negotiate forward rate commitments. Some shippers argue that such a hedging system will not work unless the railroad beds are nationalized so that more than the railroad company can use the same railroad track.

VII. Knowledge of rates is essential in marketing agricultural products. Many shippers complain that they cannot keep current with the rapid rail rate changes. Shippers believe that an effective and rapid method is needed to inform all shippers of rail rate changes. Shippers also argue that the ICC should re-evaluate its policy of granting one-day and other short notice rate changes, and be more conservative in using this authority.

VIII. There is considerable confusion regarding the legal position of small shippers to bargain collectively with railroads in negotiating a multiple-shipper contract. Joint action by small shippers might overcome part of any disadvantage associated with their size in contract negotiations. The ability of small and medium sized shippers to bargain collectively with railroads

would enable these shippers to take advantage of lower cost low volume rates, to share the costs of keeping current on rapidly changing rail rates and of estimating rail costs.

There is considerable disagreement between the grain industry and the railroad industry on several of these issues. Resolution of these disagreements in a mutually beneficial manner is more likely to happen if railroad and grain industry representatives attempt to understand each other's operations and problems. A dialogue between these two groups might be a better alternative than additional legislation to solve these problems.

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The demand for timber products is largely determined by the level of activity in several important end-use markets. Before discussing demands for the various products, I would like to review the trends in these markets and discuss the current estimates of their trends this year and early in 1983.

Domestic Markets

Activity in the major timber products markets in the United States continued at low levels in the third quarter of 1982. However, early in the fourth quarter several economic indicators, including a prospective increase in the gross national product, and declines in long- and short-term interest rates suggest some improvement late in the year and in 1983. The extent of any increase for most timber products will depend primarily on a sustained rise in residential construction activity.

The Nation's gross national product, the most comprehensive measure of total economic activity, rose to a seasonally adjusted annual rate of \$1,481 billion (1972 dollars) in the third quarter of 1982. Although this represented a continuation of the small increase shown in the second quarter, it was still 4.6 percent below 1981's \$1,503 billion. Preliminary data late in the third quarter show strength for some economic sectors including small increases in personal income and personal consumption expenditures and declines for others. Interest rates were also moving down from the historically high rates earlier in the year. On balance, these various indicators suggest fourth quarter real (i.e., net of inflation) gross national product may continue the slow upward trend started in the second quarter. For the year, however, real gross national product is likely to be below that of 1981 because of the steep first quarter decline. Most analysts now expect a growth rate of about 3 percent in 1983, with the largest increases in the second half of the year.

A key determinant of the demand for many timber products is construction activity, and most particularly residential construction activity. Housing is the Nation's most important market for softwood lumber and plywood, and a major end use for many other timber products such as hardwood plywood, particleboard, and insulation board. And not only is it a large direct consumer of wood, but it provides the stimulus for homeowner purchases of many manufactured goods, including household furniture, a major manufacturing user of hardwood lumber, plywood and veneer, hardboard and particleboard.

Housing starts dropped to a post World War II low annual rate of 854 thousand units in October 1981. There has been some month-to-month fluctuation since that time, but the rate has been slowly trending upward and since June has been above year-earlier levels. Mortgage interest rates remain high by historical standards, however, recent declines, coupled with recent increases in the numbers of construction permits issued, indicate to most housing analysts that continued improvement is probable in the last quarter. If interest rates continue to moderate, starts for the year are likely to be a little under 1.1 million units. This is about the same as the number of units started in 1981, but only slightly more than half the 2.0 million starts in 1977 and 1978. Shipments of mobile homes, a type of dwelling that many families have turned to in recent years as conventional housing costs increased, are likely to be near or slightly above the 1981 total of 240 thousand units.

Estimates for 1983, predicated on a continued slow decline in interest rates and pickup in the overall economy, are for a start level of 1.3 to 1.4 million units. Mobile home shipments are likely to follow the same general upward trends.

Through the first 10 months of 1982, one-family units composed about 62 percent of all private starts (seasonally adjusted basis), somewhat below 1981 when 65 percent of the private units started were one-family. A decline in the proportion of this type of unit has special significance for timber products because average per unit use of lumber, plywood, and other wood-based panel products is much higher than in multifamily units and in mobile homes. Single-family units' share of total starts is expected to continue somewhat lower in early 1983 than in the recent past.

Expenditures for residential alterations and repairs improved in the second quarter of 1982 from the low rate in the first quarter. Alterations and additions showed a particularly large increase. In the past, many homeowners have apparently met their needs for additional space by alterations and remodeling during housing downturns. However, the high interest rates early in the year appear to have constrained borrowing for these types of construction as well.

Unlike housing, nonresidential construction activity has shown no sustained trend during the first three quarters of 1982. In September, the seasonally adjusted annual rate of expenditures (measured in 1977 dollars) was still slightly below the 1981 total. Most analysts expect no sharp turnaround until the current low levels of capacity utilization increase appreciably, and, early in the fall, business plans for new plant and equipment expenditures for the last quarter of 1982 and for 1983 were being revised downward. As a result of these factors and the expectation that public construction will show no increase, nonresidential activity in 1982 is expected to be slightly down from 1981 levels and to show little improvement before the second half of 1983.

The seasonally adjusted index of industrial output--an important indicator of the demand for pallet lumber, container board, and some grades of paper--was 136.3 (1967=100) in October. Although this was 8.6 percent below the year-earlier level, much of the drop came in late 1981 and in the first quarter of 1982. Since June, the decline in total output has slowed appreciably; however, the October drop was an indication that no sustained rise is likely before very late in the year or early 1983.

In contrast to overall production, output of the furniture and fixtures industry--an important hardwood lumber, plywood, particleboard, and hard-board market--has been following a slowly rising trend since January, although the production index in September was still about 1 percent below the 1981 average. A continuation of the upward trend in furniture output and a turnaround in the other industrial wood products markets is likely late in the year and in 1983 as economic growth and housing output improve.

International Markets

The United States is the world's leading importer of timber products--chiefly lumber, woodpulp, and paper and board from Canada and veneer and plywood from southeast Asia. The total value of these imports in 1981 was about \$9.0 billion, 3.5 percent of the value of all U.S. imports. In terms of roundwood equivalent, more than a fifth of our apparent consumption of timber products has been imported in most recent years.

The United States is also a major timber products exporter. In 1981, the total value of timber product exports was about \$7.9 billion--also about 3.5 percent of our exports. Although we ship a variety of wood products to many countries, our principal export markets are Japan for softwood logs and lumber, pulp chips, woodpulp, and paper and board products, and western Europe for woodpulp, paper and board products, and smaller amounts of lumber and plywood.

International demand for many U.S. timber products, which had been generally trending up in the late 1970's, began to decline in 1980 as economic growth slowed in our major overseas markets. These trends have continued in 1981 and 1982. Particularly important has been the slump in Japanese housing, the principal market for most of the softwood logs and lumber imported from the United States. Also important has been the relatively weak economic conditions in our major European markets and to some extent the strengthening exchange rate for the U.S. dollar. The outlook for international trade appears somewhat flat for the remainder of 1982 and consequently total wood products exports will likely be under the 1981 volume. International wood products specialists expect a gradual improvement in 1983 if the economies of our major trading partners improve, however prospects in many countries remain uncertain.

Timber Products Production,
Trade, and Consumption

Softwood Lumber

Through the first 8 months of 1982 softwood lumber production was down about 16 percent from the same period in 1981 according to data from the National Forest Products Association. For most of the year the industry has been producing far below its capacity. Preliminary reports indicate similar conditions were continuing in September and early October. Current expectations about housing indicate the possibility of some increase late in the last quarter, and production for the year is estimated at about 20.8 billion board feet, some 9 percent below the 22.8 billion board feet produced in 1981 (table 1) and 34 percent under production in 1978.

Imports, chiefly from Canada, are also expected to show a small rise late in the year, but overall to be down about 12 percent to 8.1 billion board feet. An increase is expected in 1983 in response to upward trends in U.S. housing and other markets. This could be affected by the imposition of countervailing duties on Canadian lumber shipments to the United States. U.S. producers have filed a petition for the imposition of such duties. Since the processes for determining if countervailing duties are warranted and putting them into effect take a number of months to complete, any major impact would be felt in 1983 and subsequent years. Currently, there are no duties on lumber traded between Canada and the United States.

Exports of softwood lumber through the first 8 months of 1982 were down about 15 percent from the similar period in 1981, despite a substantial rise in shipments to Japan. Such increases in exports to Japan are not likely to continue in the latter months of the year and no rapid turnaround is expected in the other U.S. export markets. As a result, exports for all of 1982 are estimated at 1.6 billion board feet.

Among developments that could affect the level of U.S. exports of softwood lumber and other manufactured wood products in the future are the cooperative export market development efforts currently underway by industry associations and the Foreign Agriculture Service of the United States Department of Agriculture. U.S. industries have the capacity to export much larger volumes of wood products.

Based on the estimates of production, imports, and exports discussed above, apparent consumption (i.e., production plus imports minus exports) in 1982 is estimated at 27.3 billion board feet--about 9 percent below 1981. Much of this decline is attributable to decreased use in residential and other construction markets. If housing construction improves as outlined above, and the other major markets perform as discussed earlier, consumption is likely to increase in 1983. Production, imports, and exports are also expected to rise.

Table 1.—Wood products production, consumption, and trade
(1979, 1980, and 1981 actual, 1982 projections)

Product	Year	Domestic production	Imports	Exports	Apparent consumption
Softwood lumber (billion bd. ft.)	1979	30.4	11.2	1.8	39.8
	1980	25.3	9.6	2.0	32.8
	1981	22.8	9.2	1.9	30.1
	1982	20.8	8.1	1.6	27.3
Hardwood lumber (billion bd. ft.)	1979	7.3	.4	.4	7.3
	1980	7.1	.3	.5	6.9
	1981	6.8	.3	.5	6.6
	1982	5.1	.2	.4	4.9
Softwood plywood (billion sq. ft., 3/8-inch basis)	1979	18.2	<u>1/</u>	.4	17.8
	1980	15.5	<u>1/</u>	.4	15.1
	1981	15.7	<u>1/</u>	.7	15.1
	1982	15.1	<u>1/</u>	.5	14.6
Hardwood plywood (billion sq. ft., 3/8-inch basis)	1979	1.1	2.1	<u>1/</u>	3.2
	1980	1.0	1.2	<u>1/</u>	2.2
	1981	1.0	1.5	<u>1/</u>	2.4
	1982	.9	1.0	<u>1/</u>	1.9
Particleboard ^{2/} (billion sq. ft., 3/4-inch basis)	1979	4.1	.2	.1	4.2
	1980	3.5	.3	.1	3.7
	1981	3.5	.3	.1	3.6
	1982	2.8	.2	.1	2.9
Hardboard (million tons)	1979	2.3	.3	<u>3/</u>	2.5
	1980	2.0	.2	<u>3/</u>	2.1
	1981	1.9	.2	.1	2.0
	1982	1.8	.1	<u>3/</u>	1.9
Insulation board (million tons)	1979	1.3	.1	<u>3/</u>	1.3
	1980	1.1	<u>3/</u>	<u>3/</u>	1.1
	1981	.8	<u>3/</u>	<u>3/</u>	.8
	1982	.8	<u>3/</u>	<u>3/</u>	.8
Pulpwood (million cords)	1979	86.2	1.4	3.8	83.8
	1980	88.6	1.6	3.7	86.5
	1981	84.4	1.5	3.0	82.9
	1982	81.7	1.4	2.5	80.6

^{1/} Less than 50 million.

^{2/} Includes medium-density fiberboard.

^{3/} Less than 50 thousand.

Note: The projections presented for 1982 are based on the trends in the major markets discussed in this paper and should not be viewed as forecasts of actual volumes. Data presented are subject to rounding.

Although softwood lumber prices have fluctuated through the first 3 quarters of this year, they are down sharply from the average over the past 3 years. In October, the producer price index for softwood lumber was 315.5 (1967=100) about 8 percent below the average for 1980 and 1981 (table 2) and nearly 22 percent under the high reached in late 1979. Prices for most species and grades are likely to increase in 1983 as demand moves up.

Hardwood Lumber

Because of the relatively low levels of activity in most of its major markets, hardwood lumber production during the first 8 months of 1982 was below 1981 levels. Although some improvement is possible late in the year, output for 1982 is estimated at only 5.1 billion board feet about 25 percent below production in 1981.

Hardwood lumber imports were also below the levels in 1981 and although a little strengthening is expected late in the year, the total for 1982 is estimated at 0.2 billion board feet. January through August 1982 data showed exports 13 percent below year earlier figures. The total for the year is expected to be 0.4 billion board feet, down from 0.5 billion in 1981.

Apparent consumption of hardwood lumber in 1982, based on the estimates of production and trade given above, should amount to about 4.9 billion board feet, 26 percent below 1981. Anticipated growth in the important hardwood markets suggests the likelihood of some rise in consumption in 1983, particularly later in the year.

In contrast to softwoods, hardwood lumber prices, as measured by the producer price index, have shown a small increase in 1982. Prices in October (index value 264.9, (1967=100)) were about 2 percent above those in January. Some further increases can be expected, particularly in 1983, if demand picks up as expected.

Softwood Plywood

According to data from the American Plywood Association, total production of softwood plywood was down in the first 8 months of 1982. Although September production was up 16 percent from mid-summer output, the Association expected some slowing later in the year. As a result of this trend and the low levels of production in evidence early in the year, production is estimated at 15.1 billion square feet (3/8-inch basis), some 4 percent below 1981 and 23 percent below the high of 19.5 billion square feet reached in 1978.

Softwood plywood exports, which increased in 1981, are expected to decline from 0.7 to 0.5 billion square feet. Imports will remain insignificant.

Table 2.--Producer price indexes for selected wood products

(1967 = 100)

Product	1980 annual	1981 annual	October	
			1981	1982
Softwood lumber	345.1	343.0	324.4	315.5
Hardwood lumber	252.0	255.2	258.0	264.9
Softwood plywood	308.8	306.5	278.4	277.9
Hardwood plywood	176.6	179.7	185.6	175.0
Particleboard <u>1</u> /	156.1	168.6	165.9	168.6
Hardboard <u>2</u> /	187.4	217.9	225.3	233.9
Insulation board	208.1	242.4	245.4	258.0

1/ Corestock.2/ Type II, 1/8-inch.

Source: U.S. Dept. Labor, Bureau of Labor Statistics.

With these levels of production and trade, apparent softwood plywood consumption in 1982 is expected to total about 14.6 billion square feet. The projected increase in housing and other markets in 1983 should result in a reversal of the declines shown this year.

The producer price index indicates that softwood plywood prices have changed little in 1982. The October index--277.9 (1967=100)--is virtually the same as in October 1981. It is however, 10 percent and 9 percent, respectively, below the average index for 1980 and 1981. Some rise is likely in 1983 as demand increases.

Hardwood Plywood

Hardwood plywood production is expected to total about 0.9 billion square feet (3/8-inch basis) in 1982, down somewhat from output in 1981. Trade data through early fall indicate that imports are likely to total 1.0 billion square feet, a third smaller than in 1981. Exports are expected to remain relatively small.

Given these trends in production and trade, apparent consumption of hardwood plywood in 1982 is estimated at 1.9 billion square feet, about 21 percent below 1981. Actual consumption may be slightly larger because of inventory adjustments. Some increase in production and imports is likely in 1983 if the important markets follow the trends discussed earlier.

Hardwood plywood prices have also declined somewhat in 1982. In October, the producer price index was 175.0 (1967=100), about 5 percent below the index in January. A reversal of this down-trend can be expected as the major residential and manufacturing markets turnaround.

Particleboard

Activity in the major markets indicates that combined production of particleboard and medium-density fiberboard in 1982 will be down about 20 percent to 2.8 billion square feet, 3/4-inch basis. Based on shipments in the first half of the year, the largest percentage drop is likely to be for medium-density fiberboard. Data for the first 8 months of 1982 indicate that imports are likely to be down to 0.2 billion square feet. Exports are estimated at 0.1 billion square feet. Given these estimates, consumption will amount to 2.9 billion square feet, 19 percent below 1981. An increase is likely in 1983 if housing starts and the major industrial markets improve as indicated earlier.

Hardboard and Insulation Board

Hardboard production in 1982 is estimated at 1.8 million tons (5.4 billion square feet, 1/8-inch basis), down about 4 percent from output in 1981. Imports are expected to total 0.1 million tons and exports slightly less than 50 thousand tons. Apparent consumption with these estimates of production and trade would amount to 1.9 million tons (5.7 billion square feet).

Insulation board production for 1982 is estimated at about 0.8 million tons (2.1 million square feet, 1/2-inch basis)--about 6 percent under output in 1981. Imports and exports are expected to be less than 50 thousand tons. Therefore, apparent consumption is also estimated at 0.8 million tons.

If housing and manufacturing follow the trends outlined earlier, the demands for hardboard and insulation board are expected to increase in 1982. Prices are also likely to follow the upward trends of the past two years, as indicated by the producer price indexes.

Pulpwood

According to data from the American Paper Institute, the seasonally adjusted annual rate of paper and paperboard production through the first three quarters of 1982 was 59.8 million tons, about 4 percent below total output in 1981. Production of woodpulp--which currently constitutes about 78 percent of the fiber raw material consumed in U.S. paper and board mills--was also about 4 percent below 1981 consumption. Much of the decline in paper and board production and in woodpulp consumption came in the second quarter. Although both have been rising slowly since June, growth in the last quarter is not expected to increase enough to bring output for the year up to 1981 levels, and consequently pulpwood production is expected to decline about 3 percent to 81.7 million cords.

Imports of pulpwood are expected to total 1.4 million cords and exports 2.5 million cords. These volumes are, respectively, about 4 percent and 15 percent below 1981. Nearly all of the decline in exports is likely to be in chip shipments to Japan.

Apparent consumption for all of 1982, given the above estimates of production and trade, amounts to 80.6 million cords, 2.7 percent under use in 1981. Prospective increases in economic activity suggest that consumption and production are likely to rise in 1983.

Softwood Log Trade

Softwood log exports during the first three quarters of 1982 were sharply above year-earlier levels primarily because of growth in shipments to the Peoples Republic of China. For the 9-month period, exports to that country accounted for more than half of the increase in shipments from the West Coast, and for 20 percent of the total. Exports for all of 1982 are estimated at 2.8 billion board feet, about 18 percent above shipments in 1981. The outlook for 1983 is for a continued increase.

Imports of softwood logs have shown a small drop but are expected to be close to 0.1 billion board feet.

Hardwood Log Trade

Hardwood log exports for 1982 are estimated at 0.1 billion board feet. Although the volume is small, most of the hardwood log exports in 1982, and in recent years, have been composed of quality oak, walnut, and other preferred species that are in short supply in the United States. These exports have thus been an important contributing factor to the large increase in stumpage and log prices for some domestic species.

Hardwood log imports in 1982 are expected to be close to the 1981 volume of 14 million board feet.

Fuelwood

Use of wood for fuel has been increasing rapidly in the late 1970's and early 1980's. According to preliminary results from a survey of household consumption, more than 40 million cords is currently being used each year for domestic heating and cooking. Various surveys of forest industries indicate the industrial use of wood has also been rising. Apparently most of the wood used for domestic purposes is currently produced from urban areas, fence rows, dead trees, and other similar sources not normally drawn on for industrial timber. Growth in use in the forest industries has come mainly from increased utilization of logging and mill residues.

Because most of the rise in fuelwood use has come from such sources, there has so far been no significant impacts on industrial products such as pulpwood. This may reflect, in part, the generally depressed demand situation over the past 3 years. If the use of fuelwood continues to grow, it will undoubtedly begin to affect other products, especially when the demand for these products rises.

Summary

Given the trends in consumption, trade, and production for the various products discussed earlier, U.S. production and consumption of all roundwood products, including an estimated increase in fuelwood, is expected to be sharply under 1981 levels. Total imports and exports, including the pulpwood equivalent of pulp, paper, and board also will be down. Some rise in consumption, imports, and production can be expected in 1982 if the various markets, particularly housing, behave as discussed earlier. Exports also will likely increase.

Although the outlook in most of the important markets for timber products is for relatively slowly rising demands in the months immediately ahead, the longer run outlook is one of growth. The annual demand for housing, for example, is expected to reach 2.2 to 2.3 million units by the late 1980's. Projected increases in population and income in the 1980's and beyond also suggest continued and substantial growth in the industrial and nonresidential construction markets as well.

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1982 has been a difficult year for the farm sector. Three successive years of low income and recent high interest rates have resulted in financial stress for many farmers. The rising value of the dollar, large global crops, and sluggish foreign economic conditions have also contributed. The anticipated economic recovery for the United States and major trading partners, a precondition for improved demand, has been stalled until 1983. There are signs of improvement. However, until these prospects result in improved demand, returns to agriculture will continue to be low, and land markets will remain sluggish. Although the number of farmers in financial stress will very likely increase, the share of farmers in financial stress is low. Many farmers have reduced input purchases, capital expenditures, or have taken other actions to improve their cash flow situation.

Export Market Developments

Improvements in international economic conditions will have an important part to play in the recovery of the farm economy. Weak demand combined with 2 successive years of historically high crop production have resulted in large world stocks that will constrain export growth and much needed price strength.

As export markets have become an increasingly important outlet for U.S. commodities, the farm sector has become more sensitive to international crop and economic developments. The linkages between the U.S. agricultural sector and world economies grew dramatically during the 1970's. Export markets are now the dominant outlet for several major farm commodities. Each year, U.S. farmers export about one-half of their soybean production, about two-thirds of their wheat, and one-third of their corn. The export share of many other crops, including rice, sorghum, cotton and tobacco is also large. Rapid expansion in the export markets was a major reason for the growth and investment in agriculture and higher income levels during the 1970's. While offering greater market opportunities, the reliance on export markets has also generated increased risks for farmers.

Changes in demand resulting from exchange rate adjustments is one of these risks. A declining real value of the dollar through much of the 1970's was a stimulus to demand because our products became less costly in terms of foreign currencies. The current strengthening of the dollar has had the reverse effect. In the past two years, the value of the dollar increased by roughly 20 percent against other currencies due to the relative strength of the U.S. economy and differences in macroeconomic policies.

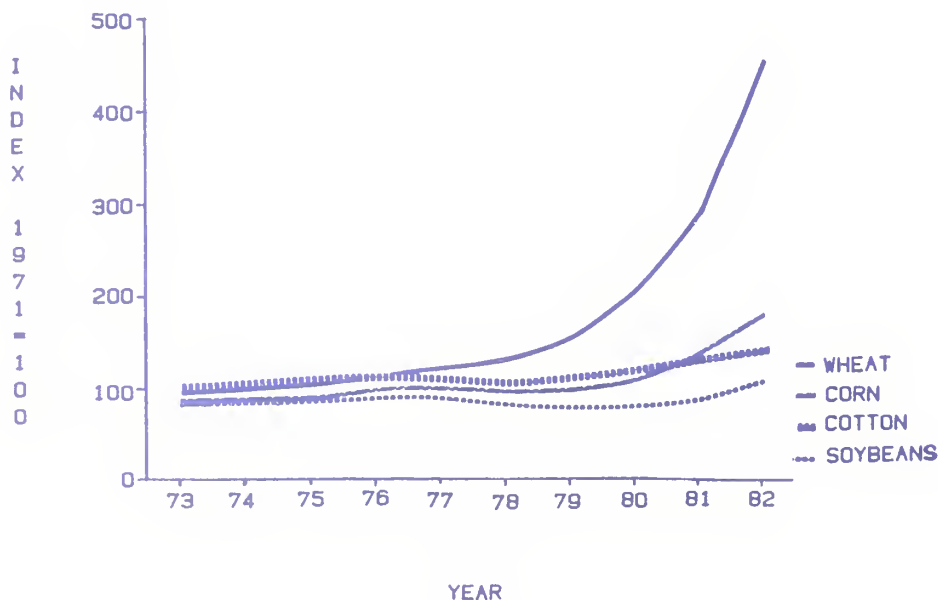
Changes in exchange rates of this magnitude force large economic adjustments on sectors in the United States that are highly dependent on export markets. Consumers of imported goods in the United States benefit from more valuable dollars; however, the terms of trade for producers of major farm commodities declines. For example, the price of wheat to foreign purchasers increased by 65 percent during the 12-month period prior to this November 1, while the price of wheat in domestic markets dropped by 5 percent. Export prices for other major agricultural crops showed similar but less pronounced increases (fig. 1). Dollar exchange rates are forecast to decline somewhat in 1983 which should help reduce the growth in export market prices.

With relatively favorable weather next year, world crop production in 1983 would remain at historically high levels. World coarse grain production could increase from year-earlier levels. Global wheat production may be about the same as this year, but trade and U.S. exports are likely to decline. U.S. soybean supplies and world oilseed production may reach record levels. Given the large carryover from this year's crops and the supply and demand outlook, the current imbalance seems likely to continue, with the U.S. holding a larger share of world stocks.

On the demand side, current prospects for world economic growth indicate a small likelihood for substantially improved exports, reduced stocks, and higher farm prices. Global real economic growth in 1981 was 2.1 percent. Forecasts for 1982 show a 3 percent growth rate. Growth at this rate is not likely to result in improved per capita consumer incomes, a key ingredient for U.S. agricultural export market growth. By comparison, annual world economic growth in the 1960's and 1970's, when U.S. crop exports grew rapidly, averaged 4-5 percent.

Figure 1. Trade Weighted Dollar Exchange Rates

TRADE WEIGHTED DOLLAR EXCHANGE RATES



U.S. Macroeconomic Developments

The major development in the U.S. economy for 1982 was the continued delay of economic recovery. Interest rates stayed high longer than expected in 1982, given the increases in the money supply and reductions in the inflation rate. The tax cut enacted last summer that was intended to stimulate investment, consumption, and economic growth, was largely offset by high interest rates. Low capacity utilization and a weak cash flow situation for many firms were also inhibiting factors. The slight increases in GNP in the second and perhaps the third quarter of 1982 were largely due to a slower rate of inventory liquidations, rather than increases in sales which characterize economic recovery. A continued slow rate of expansion in general economic activity is expected to dampen food demand, particularly for livestock products, during the months ahead.

Two policy changes took place during mid-year that could improve recovery prospects. Congress passed the Tax Equity and Fiscal Responsibility Act of 1982 which is expected to reduce fiscal deficits by \$100 billion over the next 4 years. Secondly, the Federal Reserve System took actions to ease monetary restraint. These two actions, in combination with tax cuts, could lead to improved domestic economic prospects beginning in early 1983.

Through 1983, economic recovery will be sluggish by historical standards, with real GNP and disposable income growth forecast at 2 to 3 percent--about half the rate typically shown in most recoveries. While the recent declines in interest rates are cause for optimism, they could rise moderately through 1983 if no further policy actions are taken. Expected strong credit demand, resulting from a large projected Federal deficit will be an important factor causing moderate increases in interest rates.

Farm Sector Financial Developments

Financial indicators of the farm sector continued to deteriorate in 1982. Significant reductions in inflation, interest rates, capital expenditures, and input use have provided some relief on the expense side in 1982; but cash flow problems continued with cash receipts declining and total production expenses increasing. Net farm income, net cash income, personal disposable income, and net farm equity will all show declines in 1982. However, aggregate statistics, while accurately portraying sector-wide developments, mask differences in financial health among types of farms and regions of the country.

Cash Receipts Down; Growth in Expenses Slowed

This year's drop in total crop and livestock receipts was paralleled by a significant reduction in the rate of growth in farm production expenses. Total cash receipts from farm marketings in 1982 will likely fall slightly from last year's level to about \$142 billion (table 1). Crop cash receipts are expected to fall 3 percent to about \$73 billion while livestock receipts may rise 1 percent to \$69 billion.

Receipts may drop about 12 percent for food grains, 11 percent for cotton, and about 4 percent for oil crops. Receipts for feed grains may rise somewhat as large marketings and heavy CCC loan use offset lower prices.

Table 1. 1982 Cash Receipts 1/

Crop			Livestock		
	<u>Billion dollars</u>	<u>% change from 1981</u>		<u>Billion dollars</u>	<u>% change from 1981</u>
Food grains	10.9	-12	Red meats	40.1	+3
Feed grains and hay	19.2	+5	Poultry and eggs	9.5	-4
Oil crops	13.5	-4	Dairy products	18.1	N.C.
Cotton	4.0	-11	Other live- stock products	1.3	N.C.
Vegetables	7.9	-6	Total live- stock	69.0	+1
Other crops	17.5	+2			
Total crops	73.0	-3			

1/ Forecast

The decline in crop receipts will be partly offset by a small gain in livestock receipts. Prices received for livestock and products are expected to climb nearly 2 percent over last year's level, more than offsetting a slight decline in marketing volume. Hog receipts will rise about 11 percent and cattle receipts remain near last year's level. Receipts for poultry and eggs will likely slip about 4 percent this year, the first decline since 1974.

The growth in production expenses declined significantly this year. Total farm production expenses in 1982 are expected to rise about 2 percent to \$144 billion after climbing 10 percent in 1980 and about 9 percent last year. This year's increase would be the smallest since 1968 and is due to moderating input price increases and reduced input use.

Prices paid for feed have fallen about a tenth this year in response to lower prices for corn, soybean meal, and mixed feeds. Prices paid for fuels and energy have also averaged below a year earlier because of reduced demand and abundant supplies. Farm wage rates have remained near those of 1981, while prices paid for fertilizer, seed, building and fencing materials, and feeder livestock will likely average just about last year's levels.

Despite recent declines in market interest rates, interest expenses will likely climb to over \$22 billion this year, with average debt outstanding rising about a tenth and the interest rate on all outstanding debt increasing to about 11 percent. The impact of current reduced rates will largely be delayed until 1983.

Government Payments Up

Direct Government payments to farmers are currently expected to total about \$4.0 billion in 1982, up from \$1.9 billion in 1981. Direct payments in the first half of 1982 totaled about \$1.3 billion, but second-half payments could reach \$2.7 billion. Deficiency payments to wheat and barley farmers for the 1982 crop will add about \$600 million to the 1982 total. Advance payments under the 1982 feed grain, cotton, and rice programs could add over \$650 million. Farmer-owned reserve storage payments will contribute over \$700 million to farm cash flow.

Farm Income Down Moderately

Income levels in the farm sector deteriorated for the third consecutive year (table 2). Cash income from farming, which measures cash available for household consumption, business operations, and capital expenditures, is expected to be about \$31 billion in 1982, down about 2 percent from cash income in 1981.

Table 2. Farm Income Indicators

Year	Cash income from farming <u>1/</u>	Operators' net farm income <u>2/</u>	Per capita disposable income of farm population
	<u>Billion dollars</u>		<u>Dollars</u>
1970	18.0	14.2	2,446
1971	17.6	14.8	2,679
1972	22.3	18.9	3,124
1973	34.5	33.4	4,490
1974	33.1	26.0	4,257
1975	28.5	25.2	4,559
1976	28.7	18.7	4,239
1977	26.1	18.4	5,284
1978	35.0	26.7	6,355
1979	37.0	32.3	7,466
1980	35.8	20.1	6,598
1981	31.5	25.1	7,720
1982 <u>3/</u>	31.0	19.0	7,500

1/ Cash receipts from farm marketings (including net CCC loans), government payments, and other sources less intermediate product expenses, business taxes, wages, and net rent to landlords.

2/ Cash receipts from farm marketings, government payments, non-money and other farm income less total production expenses including depreciation.

3/ Forecast

Net farm income, a measure of returns to farm operators for labor, management, and investment, will also decline in 1982. The current assessment for net farm income after adjusting for inventory changes is \$19.0 billion, down from \$25.1 billion in 1981.

Per capita disposable income of the farm population is likely to fall 2 to 4 percent from 1981's level of about \$7,700 to about \$7,500. This figure stands at 80 percent of non-farm per capita disposable income. This broad measure of the well-being of farm families includes after tax income from both farm and off-farm sources. Although personal income from farming will likely decline in 1982, income from off-farm sources may rise 3 to 5 percent.

Current prospects for improved farm income in 1983 are not favorable. Although production expenses will continue to moderate, perhaps increasing only 2 to 3 percent, total cash receipts are currently not expected to rise significantly. Crop receipts may decline somewhat but livestock receipts could rise and be offsetting. Weather and economic improvement will be major factors affecting the income situation for 1983.

Interest Expenses Take a Bigger Bite

The inflation-fed high interest rates that began to escalate rapidly in 1979 have been particularly damaging to the financial well-being of agriculture. This year farmers will spend \$77 billion on nonfarm-produced inputs; about 25 percent will be purchased with the use of credit. Of about \$30 billion in capital purchases, 50 percent will be financed. Since 1979, the credit costs for wheat, soybean, and corn producers nearly doubled, increasing to one-sixth of production costs, excluding land charges. Interest expenses will account for about 15 percent of total production expenses this year compared with 12 percent in 1980, and 7 percent in 1973 (fig. 2).

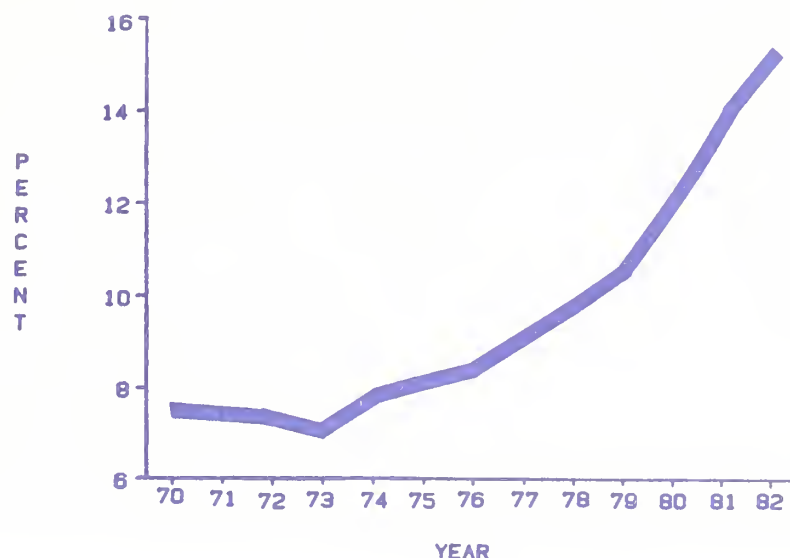
Since agriculture is highly dependent on inventories to carry out its operations, high interest rates also have substantial hidden costs and cause many producers and grain processors to alter marketing and storage plans. High interest rates also cut into farm income by increasing production expenses as higher interest charges paid by non-farm manufacturers and suppliers of goods and services to the farm sector are passed along in the form of higher prices. The impacts of high interest rates on economic activity, disposable income, and consequently, demand for farm output are also important.

The interest rate outlook for agriculture has improved significantly since early in 1982 and will provide relief on the cost side of agriculture. Current 1983 forecasts are for the prime to average in the 12 to 14 percent range, which compares to a 1982 average of slightly below 15 percent. Treasury bills are down 4 to 5 percentage points from nearly a year ago. Although rates for Treasury bills are likely to increase gradually through 1983, they still should average 1 to 2 percentage points below 1982 averages.

Changes in interest rates charged by production credit associations and Federal land banks will generally reflect changes in national money markets, but with a lag. The current decline in rates charged by PCA's and FLB's is likely to continue through much of 1983, but their rates may increase slightly in the fourth quarter of next year. PCA rates may drop as much as 2.5 percentage points and FLB rates 1 percentage point from 1982 average levels.

Figure 2. Interest Share of Total Production Expenses

INTEREST SHARE OF FARM PRODUCTION EXPENSE



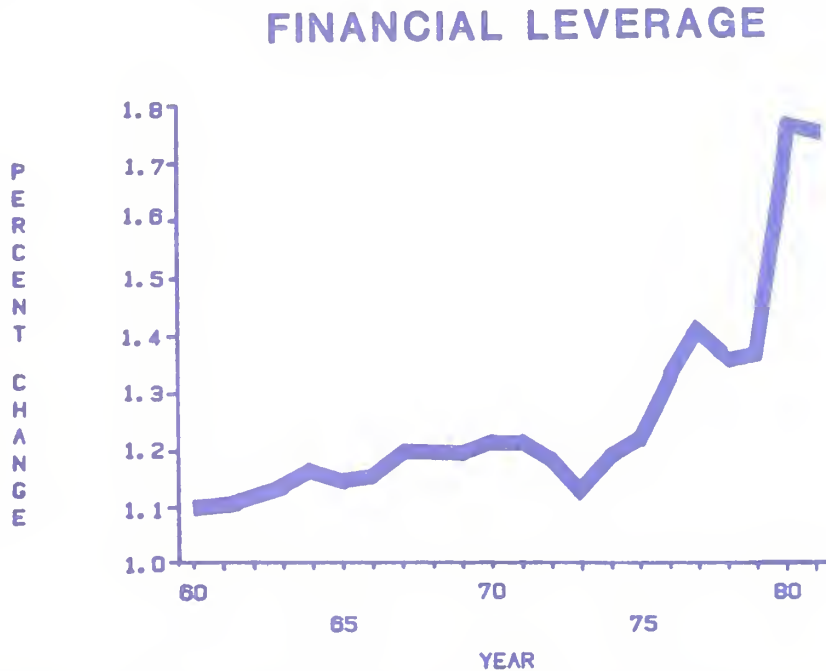
Credit is Available But Demand Likely to Fall

There is no indication that farm loan funds are in short supply or that agricultural lenders will have difficulty in obtaining loanable funds. Commercial banks are liquid as evidenced by low loan to deposit ratios. However, banks indicate that only farmers with adequate equity will qualify for credit. At current interest rates and commodity prices, qualifying for a loan on a cash flow basis will be difficult for farmers that are heavily in debt. It is likely that debt restructuring, loan extensions, and renewals to marginal farm borrowers will slow from the pace of the last 2 years. However, continued drops in interest rates may provide a favorable opportunity for farmers to refinance current loans at a lower rate.

Farmers Are Highly Leveraged

The negative real interest rates during the 1970's contributed to the rapid growth in the use of debt capital for farm expansion. Indeed, during the 1970's, with asset values climbing rapidly, farm financial management was heavily geared towards the use of debt to cash in on otherwise unrealized capital gains. This strategy resulted in a general growth in the degree of financial leverage, a measure of the stability of residual earnings, and brought high returns to farmers (fig 3). It also put many farmers in financial difficulty when the growth in asset values slowed and earnings dropped. The use of real estate secured debt as a means for capturing capital gains resulted in fixed debt obligations that could no longer be met as net cash income became tighter and tighter. Consequently, in recent years residual earnings became

Figure 3. Degree of Financial Leverage



increasingly unstable. In 1981 a 1 percent change in earnings before interest and taxes would have resulted in about a 1.8 percent change in residual earnings to farm operators. In 1970, there would have been about a 1.2 percent change.

Farmers with a 50 percent debt-to-asset ratio realized total rates of return in the order of 19 percent during the seventies, while farmers with no debt received returns of 10 percent. As cash flows declined and capital gains slowed, the returns to the heavily leveraged and debt-free operator reversed. In 1982, returns to a debt-free farmer will be in the range of -3 to -7 percent, while those for a heavily leveraged farmer will be at -14 to -18 percent (fig. 4). Given current low rates of return, cash flow difficulties, and exposure to risk, farmers will likely follow a much less expansionary financial strategy, relying less on debt financing, and avoiding exposure to cash flow shortages.

Delinquencies, Foreclosures, Bankruptcies Up

The cumulative effects of three years of low farm income were reflected in a recent survey of how bankers perceive financial conditions in their lending areas. The survey indicated that delinquencies, farm liquidations, and bankruptcies are up, that a greater portion of farmers are reaching practical lending limits and are likely to have their financing discontinued in 1983. However, it also revealed that upwards of 95 percent of banks' farm customers in the United States are able to deal with the financial stress and will continue to obtain financing. The survey also supported widespread indications that the problems are most severe in the South where cash grain and cotton producers are under pressure and in the Corn Belt. While the livestock situation has improved, livestock producers share in the financial stress.

Agricultural banks reported a national average delinquency rate of 3.9 percent in June 1982 (fig. 5). The rate varied from 3.5 percent in the Northeast to 5 percent in the West. A 4.6 percent rate was reported by banks in the South. It was also reported a high of 5.2 percent of farm loans to cotton producers were delinquent and a low of 3.6 for dairy producers (fig. 6).

Figure 4. Return to Equity in Farm Assets

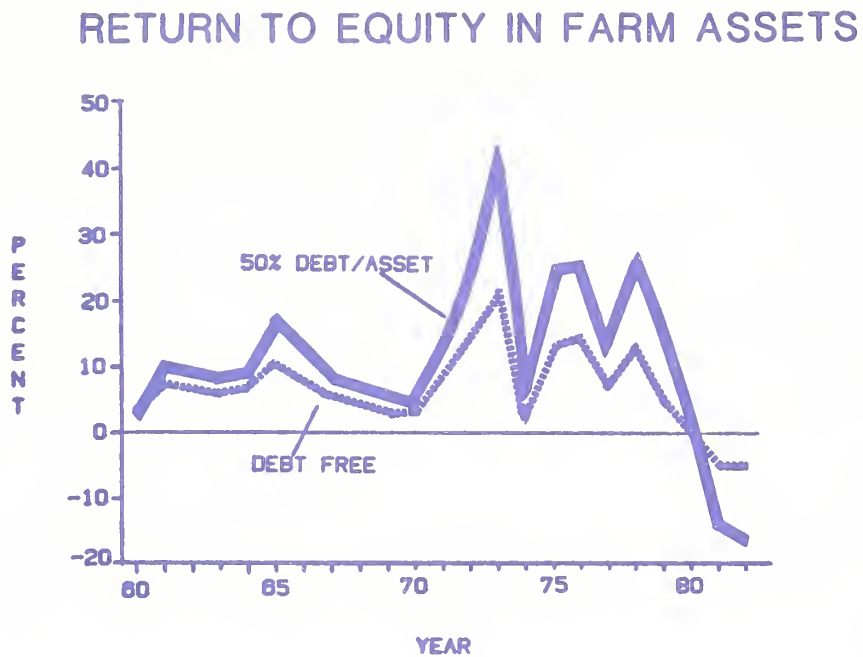
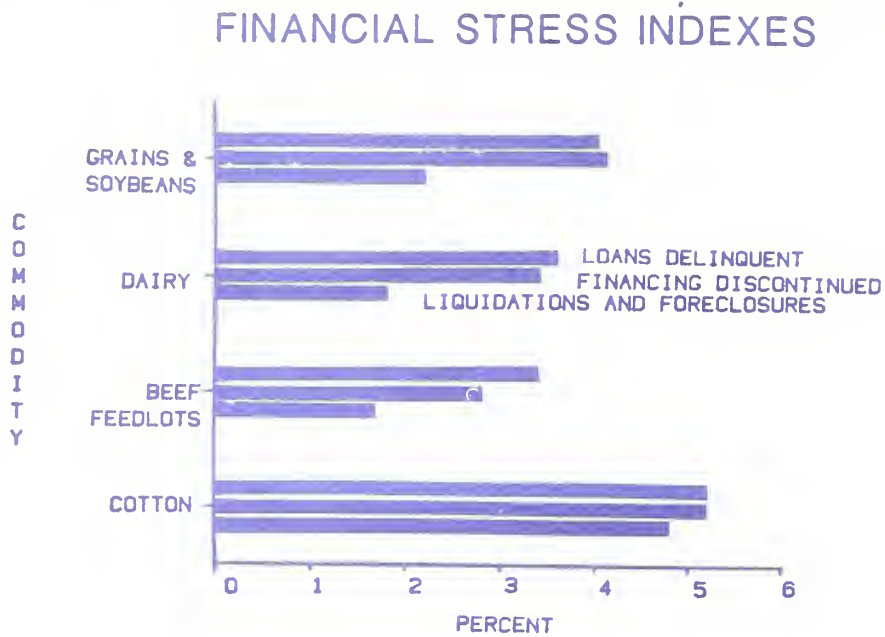


Figure 5. Financial Stress Indexes



Figure 6. Financial Stress Indexes



Nationwide, 3.3 percent of the banks' farm customers had their financing discontinued from June 1981 to June 1982. In the South, discontinuations ran 6.4 percent, while in the Corn Belt, the rate was 2.8 percent.

Banks expect the rate of discontinued financing to rise for the year ending June 1983 with the largest increase in the Corn Belt and Plains regions to 4.2 and 4.5 percent, respectively. Banks in the South put the figure at 7.7 percent.

The high percentages of farmers that are loaned up to their practical limit underly the increasing rate of discontinued financing. Banks report that 32 percent of their farm borrowers are loaned up, a rate that will increase slightly in the coming year. As of June 1982, about 50 percent of the farm borrowers in the South and 40 percent in the West have reached their borrowing limits. Banks report that these rates are not likely to change through mid-1983 and that cotton and beef feed-lot operators will be those most constrained by lending limits.

Banks indicate that 2.2 percent of farmers nationwide went out of business during the period June 1981 to June 1982. Farmers in the South recorded the highest incidence at close to 4 percent, while those in the West and Plains were at the national average. Slightly above 60 percent of the banks indicate that nationwide the rate of going out of business is higher than normal. Those banks indicated that it was about 17 percent higher than normal. For nearly all regions and commodity breakdowns, voluntary liquidation was the most frequently used means for going out of business.

The bankruptcy rate for farmers was three-fourths of one percent nationwide. About half of the banks in the survey indicated that this was higher than normal with the other half indicating that the rate is normal. The bankruptcy rate ranged from 1.6 percent in the South to .37 percent in the Northeast. The Corn Belt and Plains were near the national average. Cotton producers had the highest bankruptcy rate at 1.7 percent.

Farmland Values Decline

A major development over the past year has been the decline in farm real estate values. After increasing at an annual rate of 13 percent during the 1970's and 9 percent in 1980, farmland values declined by 1 percent in the February 1981 to April 1982 period. The greatest declines were registered in the Corn Belt, Lake States, and the Southeast.

A look at a comparison between the rate of growth in income returns to land and capital gains demonstrates why land values declined last year and why they may decline again this year. Five year average growth rates in income returns to land ownership far outstripped capital gains increases between 1960 and 1974 (table 3). This created the expectation by purchasers of farmland that increases in land values were justified by the growth in income returns to land.

Beginning in the 1975-79 period, however, the average increase in land values was substantially higher than the average growth rate in returns to land values--5.6 percent compared to 1.1. Looking at the 1975 to 1981 period, capital gains grew at an average rate of 2.6 percent and the real rate of growth in income returns to land fell to a -1.6 percentage rate. Land values are certain to drop further in 1982 and possibly 1983 with the largest declines occurring in the Corn Belt and the South. Land value appreciation will most likely lag behind improvements in growth in income returns to land ownership, just as declines in land values followed with a lag in the decline in this growth.

Farm Sector Equity Declines

After adjusting for inflation, farm sector equity will likely decline for the second consecutive year. While real growth in farm sector wealth has been negative about one year in four in the past forty, this year was the first in which nominal wealth has declined since the early 1950's. The decline in farm sector wealth is primarily due to declining land values.

Table 3. Real Capital Gains and Growth in Income Returns to Land

Period	Capital Gains on Farmland	Rate of Growth in Income Returns to Land
1960-64	3.5	9.2
1965-69	2.3	9.8
1970-74	5.5	18.9
1975-79	5.6	1.1
1975-81	2.6	-1.6

In 1972 dollars, farm sector assets totaled \$558.5 billion as of January 1, 1982, a 9 percent decline from year-earlier levels (table 4). Total real debt for the farm sector was about \$100 billion, up 1 percent from year-earlier levels. Total farm sector equity declined 11 percent in real terms.

Current prospects are that farm sector equity for January 1, 1983, will decline again. Retained earnings will not increase and asset values, particularly land values, are likely to decline. The deflated value of agricultural assets on January 1, 1983 may drop around 8 percent and total debt could rise by about 2 percent in constant dollars. The ratio of debt-to-assets would thus increase to about .20 percent, the highest in forty years.

Summary and Conclusions

The difficult economic conditions in the agricultural sector are due to a variety of factors including sluggish export markets, weak domestic demand, large grain stocks, high interest rates, and three successive years of low farm income. An improved outlook will largely depend on adjustments farmers can make to reduce costs, success in reducing grain stocks in 1983, and broad-based economic improvement in the United States and internationally.

Improvements in the domestic economic growth and employment picture in the next 3 to 6 months will be important for agriculture. Interest rates have fallen dramatically and inflation has been halved. The recent record on consumer spending and industrial production, however, has been disappointing. The potential exists for improvement in the first half of 1983. The savings ratio has increased which normally precedes increased retail sales. Residential construction has taken an unusual jump recently and stock markets have rallied--due primarily to lower interest rates. Further improvement should lead to reduced unemployment, higher disposable income, and subsequently increased food demand.

Agricultural production costs are moderating. Declining interest rates and reduced inflation have eased the situation for many farmers. Reduced interest rates should also provide breathing space for financially-strapped farmers by providing opportunities for debt servicing assistance and other measures to reduce interest expenses.

Improvements in the domestic and international economies are cause for optimism--however guarded. It will take some time before sufficient economic growth or purchasing power results in improved demand prospects and consequently vastly improved prices and incomes for agricultural producers and financial relief for those hardest hit.

Table 4--Balance Sheet of the Farming Sector, January 1, 1977-1983 1/

	Years - As of January 1st						
	1977	1978	1979	1980	1981	1982 2/	1983 3/
	Billion Dollars (Real)						
<u>Assets</u>							
Physical Assets:							
Real Estate	375.7	396.7	436.5	464.4	468.0	421.4	377.3
Nonreal Estate							
Livestock & Poultry	22.0	22.8	34.2	37.7	34.3	27.4	28.4
Machinery & Motor Vehicles	53.8	55.1	56.7	59.4	58.0	57.0	55.0
Crops Stored On & Off Farms	16.7	17.7	18.7	20.6	20.2	18.7	18.3
Household Equipment and Furnishings	9.2	9.9	10.7	10.5	10.9	11.1	10.6
Financial Assets:							
Deposits and Currency	11.2	10.9	10.3	9.8	9.1	8.6	8.3
U.S. Savings Bonds and Invest. in Coops.	14.2	13.5	15.0	14.9	14.6	14.3	14.3
Total	502.8	526.6	582.1	617.3	615.1	558.5	512.2
<u>Claims</u>							
Liabilities:							
Real Estate Debt	42.9	45.5	47.2	50.8	51.9	52.2	52.6
Nonreal Estate Debt	34.8	39.8	43.8	46.5	46.9	47.5	48.8
Total	77.7	85.3	91.0	97.3	98.8	99.7	101.4
Proprietors Equity	425.1	441.3	491.1	520.0	516.3	458.8	410.8
Total	502.8	526.6	582.1	617.3	615.1	558.5	512.2
Debt to Asset Ratio	.154	.162	.156	.158	.161	.179	.198

1/ Deflated by the implicit GNP price deflator, 1972=100.

2/ Preliminary

3/ Forecast

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1983 Agricultural Outlook Conference, Session 24
Washington, D.C.

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Much is being reported today about how agriculture is fairing in the current economic climate. Some reports are responsible and are an honest attempt to accurately depict the farm economy while others sensationalize and make generalized statements on the basis of one farm's poor financial condition, the root of which may or may not have been the result of a weak farm economy.

My objective this morning is to report as accurately as I can the financial condition of America's farm production sector. I will then make some general statements on some of the factors contributing to today's problems and review some possible outcomes. Finally, I will make some observations on some characteristics of tomorrow's agriculture of which successful producers in the eighties must be aware.

For the most part, these comments are personal observations with the aid of the opinions of fellow bankers from across the nation. Their opinions are partially recorded in an annual mid-year survey of credit conditions. In addition, an informal survey was conducted in early November at the American Bankers Association National Agricultural Bankers Conference and is summarized later.

Current Conditions

During this past year, a small group of agricultural lenders met quarterly with Secretary Block to discuss the changing financial conditions of farmers.¹ Each lending group monitored their farm customers throughout the year and regularly reported survey results and delinquency rates. It comes as no surprise that this data reflected deteriorating farm credit conditions as the year progressed.

Specifically, the American Bankers Association conducts an annual midyear survey. This year, nearly 1,000 bankers from across the nation responded and the significant findings were as follows:

¹This group consisted of Mike Fitch and Alan Tubbs, representing ABA, Jack Kuiken and Tom Olson representing Independent Bankers Association of America, Don Wilkinson and Larry Edwards representing the Farm Credit System. The group met with Secretary Block, Undersecretary Frank Naylor and Charles Schuman.

1. Farm credit conditions showed further substantial deterioration. Indexes of loan renewals, refinancings, delinquencies and losses were all at new highs. Repayment rates were at their lowest level.
2. Further declines in credit conditions were expected by the ag bankers during the current year, which will end in mid-1983.
3. A larger proportion of bank borrowers were discontinued in the past year than in the previous year, and a higher proportion of those discontinued did not receive financing from other sources.
4. Ample funds were available for making farm loans. The average loan-deposit ratio was 62 percent, or 5 points below the 1979 high of 67 percent. Only 11 percent of the bankers reported a shortage of loan funds.
5. Interest rates declined modestly between mid-1981 and mid-1982, but two-thirds of the bankers expected further declines during the second half of 1982.
6. Demand for credit was weak - especially for loans to finance machinery, equipment and real estate investment.
7. Ag bank profitability about matches the 1981 level, although it has declined somewhat in the Corn Belt.

More detail of these points can be obtained from a review of the formal survey report.²

While we are all aware that the condition of the agricultural production industry as reported in the Balance Sheet of the Farming Sector,³ continues to appear healthy with substantial equity, the low farm incomes and high interest rates have created a widening disparity between successful and low leveraged operations versus marginal and highly leveraged farms. The groups who are having the most distress at this time are the marginal managers, those who took on substantial leverage to undertake expansion in the last few years and young beginning farmers. Top notch managers with modest or little leverage have been able to scale back debt adequately to survive quite well and in fact may have been able to take advantage of investing at the high interest yields available.

²The results of this survey are reported in detail in Agricultural Banker, Special Report, November, 1982, American Bankers Association, Washington, D.C.

³Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1981. National Economics Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.

For those less efficient operations carrying relatively large debt, the cash flow cannot stretch far enough to cover production costs and debt service. This, of course, happened from time to time in the previous two decades; however, at that time long term refinancing was a distinct possibility, in fact, a probable outcome and permitted adequate debt restructuring to balance cash flow.

The moderating inflation rates have significantly reduced the possibility of long term debt restructuring working today. The elimination of this alternative, plus the possibility of a shrinking equity base rather than inflating equity causes lenders to take courses of action not recently considered. Even partial liquidation of assets is difficult due to the unwillingness of most individuals to expend cash or expand debt.

Another area of widening disparity is in the attitude and outlook of farm people. While the sure survivors are not elated with the farm economy, they do share an optimism for the future. On the other hand, those in more difficult straits understandably have a poor attitude and tend to be more pessimistic. They will be seeking a form of government relief and as in the past will receive a disproportionate amount of public attention. This phenomenon is not unique to this time, but is perhaps more pronounced.

A most recent survey at the ABA National Agricultural Bankers Conference bore out the fact that farming conditions continue to be very serious. However, there did appear to be some optimism that lower interest rates were going to help control cost of production in 1983.

This survey was answered by agricultural bankers, two-thirds of which have over 30 percent of their loan portfolio in farm loans. Sixty-six percent said that farm loan repayment was down from last year. Seventy-one percent of the banks reported they will take only a slight loss or no loss at all on their farm customers. Respondents said an average of 4.5 percent of their farm customers will not be financed in 1983. Over half of those not financed by their present institution will liquidate either through force or voluntarily. The respondents represented all areas of the U.S. and reported land values down by an average 15 percent; however, the range was from zero percent decline to 50 percent decline. Eighty-nine percent of the banks indicated a willingness to work with Farmers Home Administration on potential graduating credit lines. An emphasis in the meetings with Secretary Block's office was cooperation among lenders particularly with FmHA in taking on these credit lines.

In both the mid summer survey and the conference survey, banks reported adequate funds and, in fact, were in a highly liquid position. Availability of funds in the near future will not be a problem.

Events Leading to the Current Situation

It should be pointed out that the financial condition agriculture finds itself in today did not occur overnight or as a result of gross mismanagement in most cases. Borrowers and lenders alike were to some extent led into this position by the events of the past decade. The decade of the 70's started with a general rise in the level of farm commodity prices and coupled with inflation lead to substantial rises in land prices. By the old rules of farm finance, farm expansion came slowly and was delayed until adequate down payments were supplied by the borrower so that cash flow would cover the debt financing.

I remember numerous times of turning down young and under-capitalized borrowers because they weren't financially "ready" for that investment. As we moved further into the 70's, we found that the prices of capital assets were growing at a faster rate than the ability to save and exceeded the interest incentive on that savings. That is, while land prices were escalating at a twenty percent annual rate, interest rates to carry such investments were substantially less. This lasted for a sufficiently long enough time for many to adopt a new set of rules. Those rules say, buy now, it will be worth more tomorrow - if we get into trouble, we'll resell or refinance. For those who adopted the rules since 1978, the strategy is resulting in serious cash flow problems, as we once again return to the old rules of making cash flow and net income the predominant criteria in our lending practices.

Agricultural borrowers and lenders were not alone in this changing of the rules, but fell into the same trap as international lenders with loans to less developed countries by finally believing that the growth and inflation of the 70's would go on forever.

The land inflation of which I have just spoken and the rapid growth of FmHA programs covered up almost a decade of poor management by some marginal farm operations. In fact, FmHA's outstanding farm loans mushroomed from approximately \$4.2 billion in 1975 to nearly \$25 billion today. Some of the operations using this credit in addition to those taking on substantial leverage recently represent the majority of the credit lines requiring special attention today.

What Now?

It was said earlier that bankers indicated that 4.5 percent of their farmers would not be refinanced and over half of those would be forced to exit. If those not continuing to be financed by the Farm Credit System and FmHA are similar or greater, that of course, has implications for market values of the assets. If this is true, then as lenders we are faced with the delicate

situation of finding a realistic way of further extension of credit or liquidation of these lines. Too much liquidation, with its impact on asset values, could have a domino effect on another tier of farmers who would otherwise survive. Therefore, it is imperative that the major farm lenders work together and communicate about possible solutions.

Realistically, I believe there is a difference between those lenders feel should be liquidated for financial reasons and those farmers who eventually will liquidate. There are four reasons for this. First, most lenders have not been through this before and lack knowledge and fortitude; second, these are not normal conditions and many individual situations are in large part not the result of operator error; third, the declining market value of assets haunts everyone's thinking; and fourth, the bankruptcy laws force lenders to avoid that possibility until the very end. Therefore, when estimates are made of the percentage of liquidations, I believe most must be tempered downward. However, that is not to deny that the current situation represents a severe crisis to some farmers and a larger than normal number of liquidations and sales will occur. I am confident from my own experience and from talking with others that mistakes in judgment on whether to finance or liquidate will be made on the side of too liberal credit. Few, if any, will be forced to exit if their management and financial condition provide any chance at eventual survival.

Two things lenders will be doing to help the borrower will be to encourage participation in the set aside program, by insuring that he understands that the safety net held under agriculture by the FmHA is on its way out. Secondly, we will be encouraging use of the Federal Crop Insurance Corporation program.

Future Considerations and Characteristics for Borrowers and Lenders

Perhaps the most outstanding characteristic of the future is that it will involve more uncertainty and change. It won't be like the 60's or the early 70's when the year ahead was easily predictable from the events of the past few years. This fact was confirmed in an article I read recently written by Dr. Wm. Boast whose favorite topic is change. Dr. Boast illustrates his point as follows:

"Many centuries ago a Persian emperor offered a fortune to any philosopher who could write one sentence that would apply to every day of his reign. The philosopher who won the prize wrote this sentence:

"This too shall pass."

And so it is in America today.

We are headed for a period of extreme and unpredictable change. We are entering a time when no one is going to know what's coming next. We all want to know: Where are interest rates going? Where's the price of gold going? What's going to happen to real estate? What about the American economic system?

Nobody knows.

Everybody wants to know why things are getting so bad all of a sudden. Why, suddenly, is everything out of control? Why doesn't Reagan do something about it? Why didn't Carter do something about it? Why doesn't --- fill in the blank --- do something about it?

Nobody's doing anything about it because nobody can predict what's going to happen next. And in case that frightens you, try this: That's normal. The conditions of change, turmoil and confusion we're experiencing now are normal in the history of the world. Things aren't suddenly getting bad. They're just returning to the way they've always been before.

What people don't realize is that we have just come out of the longest single period of economic stability and growth the world has ever known. People who grew up in it think it was normal. But it wasn't. What's normal is what⁴ we're going into now. Change and unpredictability.

As Dr. Boast suggests, much of what we're entering is uncertain, but I believe there are some characteristics and issues which will certainly impact everyone, but farm borrowers in particular. These characteristics will modify lending and borrowing procedures in the 80's. In the 1980's we will see:

1. More modest inflation, at least for a time, which will change the policies on agricultural lending. In particular, emphasis will go back to profitability and cash flow and away from inflation and equity lending.
2. Volatile and generally high real rates of interest. Inflation plus two or three points.
3. Wide fluctuations in commodity price moves making more sophisticated marketing techniques imperative.

⁴"Managing in Uncertain Times", Dr. Wm. Boast, Farm Money Management, Third Quarter, 1982, pg. 117-120, The Miller Publishing Co., Minneapolis, Minn.

4. Reduction in the use of a government safety net for agriculture.
5. Continued narrower margins, fewer farms and higher debt.
6. More corporate ownership of farms, but an adaptation of the family farm.
7. America will continue to export technology to the less developed countries. In fact, food production in the less developed countries has been expanding at a faster growth rate than in the U.S. Export growth of farm products will not parallel the early 70's.
8. Continued higher costs of energy and energy related products (fertilizer and chemicals).
9. Transportation problems in agriculture will persist.
10. Soil conservation and land use will be a major topic by farm and non farm groups with legislation making certain practices mandatory by the end of the decade.
11. Agriculture's declining numbers and influence will make issues such as "animal rights" disproportionately important (watch out for this one).
12. Water may be a bigger issue than any of the above.

From this list it is clear that the only certainty in the future is volatility and change. And so lenders must ask what they can do to help their customers survive and in turn, to survive themselves in this uncertain world. The following ideas might be helpful. (1) Perhaps trite but still true is effective management of risk. In the case of farmers, this means hedging their bets on price moves. This can be done by encouraging participation in the Government programs. Hindsight proves that to have been a wise move in 1982. This not only provides a price hedge, but it will act to bring about a balance of supply and demand, something we must see in grains before any permanent price improvement can be realized. (2) Lenders must demand better marketing plans which permit taking advantage of profitable prices when they occur throughout the year, not necessarily accepting the price when the commodity happens to be ready for market. In the case of livestock, prudent marketing may mean staying current with marketings and not letting tonnage build up which only acts to depress future prices. (3) Encourage diversification of enterprises so all production is not sold on one market and where the operator's labor is fully utilized. One half year's labor on a cash grain operation for a beginning or highly leveraged farmer won't make it in today's agriculture.

(4) Encourage efficient and soil conserving methods of production such as reduced tillage. (5) Encourage producer to stay abreast of political issues and participate in farm organizations and commodity groups to voice their opinion and promote their interest. (6) Force cash flow planning and lending on production capacity not on inflation expectations. (7) Provide as much support in management aids as possible. Critical management decisions include marketing decisions, feeder livestock purchase decisions, breakeven analysis, record keeping, etc. All these are possible through use of a micro computer. (8) Recognize as early as possible operators that will not survive. Slowly and judiciously help them out. On the other hand, recognize those whose management and cooperation deserve continued support and stay with them as long as possible to see them through. (9) Do not be overly conservative where the farmer can afford to capital spend. Capital spending where affordable is necessary to support agribusiness and the sale of used assets, and in the process these individuals will pick up some real bargains. (10) Finally, we must express confidence whenever possible. After all, confidence is the foundation upon which our economic and financial system is built.

In summary, it would be fair to say that the farm financial situation is serious and does represent a crises for a limited segment of the industry. While these individuals may be desperate, the industry as a whole is not as portrayed by some media reports about these individuals. The industry will find solutions in reorganization of resources which hopefully will not be too much too soon. Certainly any solution will require the cooperation of all segments of the industry to bring about the best possible result.

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Dietary intakes are generally recorded for short time periods in order to calculate caloric and nutrient intakes of people. There is always the question of whether records of short time periods are representative of intakes over a longer period of time. Also, it is believed that there may be some tendency for subjects to modify their diets to contain the foods they feel they should be eating.

Subjects are not always adequately trained in keeping accurate and thorough records. The keeping of diet records over a long period of time by carefully trained subjects should give more precise information on actual food intakes and minimize any inaccuracies of a shorter period. If these diet records are then checked and coded for calculation of nutrient intakes by trained interviewers and coders, the accuracy becomes much greater.

In a study conducted at the Beltsville Human Nutrition Research Center, volunteers kept careful, detailed records of food intake for 1 year. The subjects were supplied with measuring cups and spoons and a balance for weighing food. The dietary records were brought in daily except during vacations. The coders interviewed the subjects to assure accurate and precise dietary information. Records were then coded by trained coders under the supervision of a Nutritionist.

The data base used for the calculation of caloric and nutrient content of the diets was constructed from Agriculture Handbooks No. 8-1 through 8-9, from Agriculture Handbook No. 456 (tape version), and from information from food companies. Caloric and nutrient content of recipes supplied by the subjects were calculated and entered into the data base.

The subjects were taking no vitamin or mineral supplements. Medicines were taken occasionally by some of the subjects, and a complete record was kept. One female subject took metamucil frequently, and another was taking synthetic thyroxine regularly.

Four times during the year the subjects collected duplicate samples of all food and beverages consumed for 1 week. Determination of the caloric and nutrient content of these samples will allow for comparison of analyzed values with calculated values. During the same week the subjects also collected all fecal and urine samples. Analyses of these samples will yield information necessary for determining nutrient balances of the subjects consuming their usual diets.

Fasting blood samples were taken 5 times during the year in order to determine whether blood levels of nutrients and other indices reflect nutrient intakes. Blood pressures were taken on the days when fasting blood samples were drawn.

The subjects were divided into the following groups:

Males		Females	
<u>Number</u>	<u>Ages</u>	<u>Number</u>	<u>Ages</u>
7	21-35	8	20-35
6	36-49	8	36-53

Initial heights and weights of the subjects are given below. Weight ranges for the older group of women were from 52.6 to 70.5 kg when the one female weighing 107.3 kg was not included.

	<u>Heights (cm)</u>	<u>Weights (kg)</u>
Males 21-35	170.8 - 181.0	67.5 - 95.3
Males 36-49	163.5 - 178.0	62.1 - 85.4
Females 20-35	150.0 - 170.8	45.0 - 69.7
Females 36-53	157.0 - 167.2	52.6 - 107.3

Each subject was supplied with a weighed salt shaker and was instructed to use this whenever additional salt was desired. Salt shakers were brought in once a week for weighing and determining use of salt. The number of subjects using various amounts of salt in addition to that in their food is given below.

Salt Intake from Salt Shaker

G/week	0	< 1	1	2	3	4	8
Number of Subjects	9	11	3	2	2	1	1

In this paper we compared the caloric and nutrient intakes of our 29 subjects with the average individual intakes obtained in the 1-day USDA Nationwide Food Consumption Survey of 1977-78 for all income levels. That study will be referred to merely as the Survey in the following discussion. Since several of our subjects were under 23 years of age, we have compared intakes of our 20-35 year-old groups with the average intakes of the 19-22 and 23-34 year-old groups in the Survey.

Mean daily caloric intake of the males for 1 year was approximately 300 kcal, or 11%, higher than the average individual intakes in the Survey. Caloric intake of the females was approximately 250 kcal, or 14%, higher than the average intake in the Survey. Intakes of the younger males in our study were 600 calories or 20% higher than for the older males and about 500 calories or 17% higher than for the same age group in the Survey.

Mean protein intakes of the males and females were similar to those reported for the Survey. Fat intakes in our study were also comparable to those reported for the Survey. Carbohydrate intakes were from 18 to 27% higher for the groups in our study than for comparable age groups in the Survey. The differences in caloric intake, therefore, were due to the differences in carbohydrate intake. The carbohydrate intake was 21% higher for the younger than for the older men in our study. The percent of calories from protein, fat, and carbohydrate was 15, 38, and 47, respectively. In the Survey, protein, fat, and carbohydrate accounted for 17, 40, and 43% of the calories, respectively.

Calculated crude fiber intakes were 4.4 g/day for the males and 3.9 g/day for the females. Crude fiber intake in the U.S. during the 1970's has been estimated to be about 4.8 g/day (Heller and Hackler, 1978). The crude fiber method, however, does not measure the total fiber content, since much of the cellulose and hemicellulose is broken down by the acid and alkali treatments used in the method. We determined the neutral detergent fiber content (which includes cellulose, hemicellulose, and lignin) of the food composites during the 4 weeks when the subjects collected food samples. Mean neutral detergent fiber intakes were 9.6 g/day for the males and 7.6 g/day for the females.

Total fat, saturated fat, oleic acid, and linoleic acid intakes were 22, 27, 23, and 18% higher for the younger than for the older males. However, the P/S ratios for all age and sex groups were about 0.4. Cholesterol levels in the diets were 21% greater for the younger than for the older males. Although intakes of cholesterol have probably decreased in the U.S. in the past few years, intakes have been estimated to be in the order of 450-500 mg/day (American Heart Association Committee Report, 1982). Only the younger males in our study had a mean cholesterol intake of this magnitude. Possibly the older males have consciously decreased intake levels of cholesterol.

Mean iron intake for the males was similar to that reported in the Survey, but was 16% higher for the younger males than for the older males. Iron intake of the females was about 12% higher than that in the Survey.

Phosphorus intake for the males was about 12% higher than in the Survey, and was 14% higher for the younger than for the older males. Phosphorus intake was about 13% higher for the females in this study than in the Survey, and was about 15% higher for the younger than for the older females.

Sodium intakes averaged about 3700 mg/day for the males and about 2500 mg/day for the females. Sodium intake was 13% higher for the younger males than for the older males. The amount of salt added to the food from salt shakers did not considerably increase this amount, except in the case of one subject who consumed about 8 g of additional salt per week. It has been estimated that the current daily average intake of sodium in the U.S. is about 3450-4600 mg/day (Abernathy, 1979). A moderate restriction to one-third of this amount has been suggested.

Potassium intakes averaged about 3200 mg/day for the males and 2300 mg/day for the females. A daily intake of at least 3900 mg/day, along with a low sodium intake, has been suggested (Abernathy, 1979). The optimal sodium/potassium ratio has not been determined. The ratio of sodium/potassium in this study was close to 1/1 for all sex and age groups.

Vitamin A intake for the males was about 11% higher than in the Survey. Vitamin A intakes were about 31% higher for the females in this study than in the Survey and were 14% higher for the younger than for the older females.

Vitamin C intake for the males was about 35% higher and for the females about 24% higher than for the same groups in the Survey. Vitamin C intake was 33% higher for the older than for the younger males.

Thiamin intake was about 12% higher for the males and 19% higher for the females than in the Survey. Thiamin intake was 19% higher for the younger than for the older males.

Riboflavin intake was about 11% higher for the males and about 12% higher for the females than in the Survey. Intakes were 18% higher for the younger than the older males and 13% higher for the younger than for the older females.

Niacin intake for the males was 9% higher and for the females 15% higher than in the Survey.

Summary and Conclusions:

Intakes of calories, fat, carbohydrate, saturated fat, oleic acid, linoleic acid, cholesterol, calcium, iron, phosphorus, sodium, thiamin, and riboflavin were more than 10% higher for the younger than for the older males. Intake of vitamin C was 33% higher for the older than for the younger males. Intakes of calcium, vitamin A, and riboflavin were more than 10% higher for the younger than for the older females.

Cholesterol intakes were below the estimated level of intake in the U.S. for all groups except the younger males. The P/S ratios for all age and sex groups were approximately 0.4. Sodium intakes were comparable to the estimated U.S. intake for the males, but were lower for the females. Only one male subject added salt from a salt shaker which exceeded 1 g/day. Analyzed neutral detergent fiber contents (cellulose, hemicellulose, and lignin) of diet composites were about double the calculated crude fiber intakes.

When results were compared with the average individual intakes obtained in the 1-day USDA Nationwide Food Consumption Survey of 1977-78 for all income levels, the following were noted:

Protein and fat intakes were similar.

Intakes of calories, carbohydrate, calcium, phosphorus, vitamin A, vitamin C, thiamin, and riboflavin were higher for both males and females in this study than in the Survey.

Iron and niacin intakes were higher for females in this study than in the Survey.

Due to the extensive study period, the findings in this study provided more representative information on intakes of the subjects than is usually available from short-term nutrient intake studies. The training which the subjects received in keeping accurate food intake records, the provision of a balance for weighing food, the coordination of the interviewing and coding staff, and the attention to detail of the Nutritionist in charge, certainly contributed to the accuracy of the records.

Calculated Mean Daily Intakes for 29 Subjects Studied for 1 Year

Sex and Age	Energy	Protein	Total Fat	Carbo- hydrate	Crude Fiber	Saturated Fat	Oleic Acid	Linoleic Acid	Cho- lesterol	P/S
	Kcal	G	G	G	G	G	G	G	Mg	
Males										
21-35	3033	107.5	127.5	341.3	4.4	48.8	43.8	19.5	496	0.40
36-49	2434	98.5	99.1	270.8	4.5	35.8	33.6	15.9	393	0.44
Females										
20-35	1893	66.9	73.3	222.9	3.7	27.0	25.2	11.8	296	0.42
36-53	1803	69.0	75.9	203.5	4.1	27.6	26.4	11.8	325	0.44
Males										
21-35	1145	17.8	1825	3906	3359	6213	111	1.90	2.52	28.0
36-49	980	15.0	1575	3404	3123	5790	166	1.53	2.05	25.9
Females										
20-35	785	12.0	1183	2598	2395	6479	102	1.27	1.62	18.7
36-53	616	12.2	1065	2450	2231	5576	104	1.25	1.41	18.3

SOY PROTEIN AND IRON UTILIZATION

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The level of absorption of iron from the diet depends primarily upon the iron status and iron requirements of the individual. Adult men, with a low iron requirement, absorb only a fraction, usually less than 10 to 15%, of their daily iron intake. Children and menstruating women absorb higher levels reflecting their needs for higher levels of iron than adult men. Likewise, individuals who are iron-deficient have higher levels of absorption than those with adequate body iron stores. The level of iron absorption thus provides a mechanism for maintaining a normal iron status. However, this is possible only if the iron in the diet can be readily absorbed as needed.

Iron in our diets is obtained from both heme-iron and non-heme iron. Heme iron is readily absorbed and its absorption is not affected by other dietary components. The iron in meats (red meats, poultry and fish) is about two-thirds heme-iron and one-third non-heme iron. Non-heme iron, which is poorly absorbed compared to heme iron, is present in non-meat foods as well as in meat. Its absorption is markedly enhanced by the consumption of meat or of ascorbic acid in the same meal. Conversely, absorption of non-heme iron is markedly decreased by consumption of coffee, tea and other substances when these are consumed in the same meal. In a typical mixed diet, about two-thirds of the iron absorbed daily is non-heme iron. Thus, any component which is added to our diets which affects the absorption of non-heme iron is of concern.

In several previous human studies, with whole soy beans or soy protein, levels of iron absorption or utilization were considered adequate (Kuhn et al., 1968; Layrisse et al., 1969; Moore, 1968; Sayers et al., 1973; Young and Janghorbani, 1981). However, in 1980-1981, data from several studies became available which suggested that consumption of specific soy protein products might have a deleterious effect upon the absorption and utilization of dietary iron. In a study conducted at Beltsville in the fall of 1979, 16 or 17 adult men were fed high levels of protein (approximately 1.6 gm protein/kg body weight/day) of which over 70% was provided by either textured soy, soy isolate or animal protein. Each of the three protein sources were consumed for 35 days in a cross-over design. With consumption of the soy isolate, the apparent daily iron balances were markedly lower than when similar levels of textured soy or animal protein were consumed (Table 1).

In 1980, Cook and his co-workers, in a report to AID, presented results from a series of studies with adult men in which iron absorptions from single test meals were determined. They observed a marked reduction in the absorption of non-heme iron in infant food supplements containing soy protein. In a second study, they observed an 81-83% inhibition of absorption with a soy isolate test meal compared to test meals containing egg albumin or casein. When full-fat soy flour, textured soy flour or soy isolate were

TABLE 1

EFFECTS OF SOY PROTEIN ON IRON BALANCES IN 16 OR 17 ADULT
MEN CONSUMING APPROXIMATELY 1.6 GM PROTEIN/KG BODY
WT/DAY^A

PRIMARY (>70%) PROTEIN SOURCE	DAILY INTAKE (MG)	APPARENT DAILY BALANCE (MG)	
		DAYS 15-21	DAYS 29-35
TEXTURED SOY	21.3±3.3	-2.9±6.7	-1.4±5.8
SOY ISOLATE	23.4±3.8	-8.4±5.9 ^B	-7.9±4.9 ^B
ANIMAL PROTEIN	17.5±2.9	-0.3±3.4	-0.8±1.5

^AFROM BODWELL ET AL., XII INTERNAT. CONGRESS OF
NUTRITION, SAN DIEGO, CA, AUGUST 16-21, 1981.

^BSIGNIFICANTLY LOWER (5% LEVEL) THAN VALUES (X±S.D.)
FOR TEXTURED SOY OR ANIMAL DIETS: VALUES FOR TEXTURED
SOY AND ANIMAL DIETS NOT SIGNIFICANTLY DIFFERENT.

similarly tested, a 65-92% inhibition of non-heme iron absorption was observed compared to absorptions from egg albumen test meals.

When mixtures of ground beef and textured soy were fed, iron absorptions were decreased by 53-61% (Table 2). Likewise, absorption from a test meal of soy isolate and ground beef was only 20% of that observed with a similar mixture of egg albumen and ground beef (Table 3). In these studies, the ratios of soy protein to beef used were 2 to 2-1/2 times higher than that specified for the USDA School Lunch Program and 3 to 5 times higher than that specified for use by the Department of Defense.

TABLE 2

EFFECTS OF SOY PROTEIN ON NON-HEME IRON ABSORPTION
FROM A MEAL CONTAINING BEEF (ADULT MEN)^A

PROTEIN SOURCE	% ABSORBED	% INHIBITION
100 GM BEEF	3.20	-
BEEF: TEXTURED SOY (3:1) ^B	1.24	61
BEEF: TEXTURED SOY (2:1) ^B	1.51	53
REFERENCE IRON	19.88	-

^AFROM COOK ET AL., AMER. J. CLIN. NUTR.
34: 2622-2629 (1981); VALUES REPRESENT GEOMETRIC
MEANS (N=11).

^BRATIO OF GROUND BEEF TO UN-REHYDRATED TEXTURED
SOY.

TABLE 3

EFFECT OF ADDING 100 GM OF GROUND BEEF TO A
SEMI-SYNTHETIC MEAL ON ABSORPTION OF
NON-HEME IRON^A

INCLUDED IN MEAL	% ABSORPTION	RELATIVE % ABSORPTION
EGG ALBUMEN	5.94	100
SOY ISOLATE	0.32	5
EGG ALBUMEN+BEEF	7.47	100
SOY ISOLATE+BEEF	1.44	19

^AFROM MORCK, LYNCH AND COOK, AMER. J. CLIN.
NUTR. 36: 219-228 (1982); VALUES REPRESENT
GEOMETRIC MEANS (N=7); 14.7 GM PROTEIN PER
TEST MEAL WERE PROVIDED BY EITHER EGG ALBUMEN
OR SOY ISOLATE (UNCOOKED).

Soy protein is widely used to extend hamburger in the USDA School Lunch Program and for feeding in the military. In September, 1980, the Department of Defense estimated that military personnel, on the average, each consumed 10 lbs. of soy protein extended ground beef per month. A significant portion (currently, about 15%, Bothwell et al., 1982) of the military personnel were women of childbearing age. Although it was believed that consumption of soy protein extended hamburger did not involve any known risk to any segment of the population, the results of the studies of Cook and his colleagues, together with the results of the Beltsville study, indicated a need for further studies.

A study was initiated at Beltsville to determine, under practical conditions, the effects of consuming beef extended with soy protein on iron status in children, women, and men. The specific objectives were (1) to determine the effects of long-term consumption, under practical conditions, of beef extended with soy protein on iron status of children, women, and men, (2) to compare the possible effects on iron status of consuming beef extended with different types of soy protein preparations, (3) to evaluate the effects of iron fortification on possible alterations in iron status resulting from consumption of beef extended with soy protein, 4) to compare results of possible effects on iron status to results of iron absorption tests conducted with the same adult male participants, and 5) to evaluate possible effects of consuming beef extended with soy protein and beef extended with zinc-fortified soy protein on blood zinc status. The general design of the study and the parameters measured are given (Tables 4 and 5).

TABLE 4

BELTSVILLE STUDY ON EFFECTS OF CONSUMING BEEF EXTENDED
WITH SOY PROTEIN ON IRON AND ZINC STATUS

DURATION: 180 DAYS

7 PRODUCTS (MEAT PATTIES):

ALL BEEF

TEXTURED SOY EXTENDED (FNS; "Fe AND Zn FORTIFIED")

SOY ISOLATE EXTENDED (FNS; "Fe AND Zn FORTIFIED")

SOY CONCENTRATE EXTENDED (FNS; "Fe AND Zn FORTIFIED")

227 PARTICIPANTS CONSUMING "MEAT PATTY" MEALS

50 ADULT MALES (9 MEALS/WEEK)

41 MENSTRUATING ADULT FEMALES (9 MEALS/WEEK)

115 "SCHOOL-LUNCH" PARTICIPANTS (7 MEALS/WEEK)

21 OTHER (7 OR 9 MEALS/WEEK)

62 CONTROLS (BLOOD SAMPLES ONLY)

TABLE 5

PARAMETERS MONITORED

BEGINNING/END OF STUDY

ALL PARTICIPANTS: COMPLETE BLOOD ANALYSES

ALL ADULT MALES: RADIOIRON ABSORPTION
(REFERENCE, TEST)

DAYS 0, 41, 90, 132, 181

ALL PARTICIPANTS: FERRITIN AND ZINC

"CONSUMER" PARTICIPANTS

4-DAY DIET RECORDS PRE-STUDY AND BETWEEN
DAYS 56-70 AND DAYS 119-133 (63±7 AND
126±7 DAYS)

Three soy protein sources (one isolate, one concentrate, one textured soy flour) were used to extend ground beef. Twenty percent of the ground beef was replaced by reconstituted soy protein. With the hydration procedures used, 20% of the protein in each of the extended products was provided by the soy protein source used in making each specific product. Each of the products was provided to a group of families or households (20-28 participants) as their principal source of protein for one meal a day (children, 6-18 yrs.) or for one or two meals a day (9 of 14 weekly breakfast or evening meals, adult men and women). Comparable groups of participants were provided with beef extended with soy fortified with iron and zinc or with beef without soy protein. One group of families, a "time and variability" control group, received no ground beef but gave scheduled blood samples similar to the other subjects.

Complete blood analysis were done prior to and upon completion of the 6-month feeding study. At interim times (0, 41, 90, 132 days), small blood samples (5-6 ml) were obtained to determine serum ferritin levels (one of the indicators of iron status). With the adult male subjects, radioiron absorption tests (reference and test protein) were conducted prior to the beginning and upon completion of the feeding study to ascertain the relationship between the results of iron absorption tests and measures of long-term iron status and whether or not "adaptation" had occurred relative to absorption of iron from specific sources. Zinc analyses were done on all samples obtained for ferritin analyses in order to assess blood zinc status throughout the feeding study; however, these results are not included in this discussion.

All of the soy protein preparations used contained the FNS (Food and Nutrition Service) minimum levels of thiamin, riboflavin, niacin, vitamin B6, vitamin B12, and pantothenic acid, and levels of 20 and 140 mg of iron and magnesium, respectively, per 100 gms. of protein. For each of the three soy preparations ("FNS" preparations as described above), identical preparations were fortified by the manufacturer with 60 mg of iron supplied as ferrous fumarate and 25 mgs of zinc supplied as zinc oxide per 100 gms of protein. The specified level of iron fortification used was that allowed by the Food and Drug Administration for use in iron fortification of soy-based infant formulae while the specified level of zinc fortification was a level recommended for this study by staff of the Food and Drug Administration.

The beef patties were manufactured by a commercial firm. Final protein content in the raw patties ranged from 16.5 to 17.1% with fat contents between 21.3 and 22.9%. For the patties extended with soy which was not fortified with significant amounts of iron and zinc (FNS patties), iron contents ranged from 10.7 mg (all beef) to 13.7 mg (textured soy) per 100 gms protein (Table 6). For the "Fe and Zn Fortified" soy extended patties, iron levels were 23.4 to 24.3 mg per 100 gm of protein.

TABLE 6

IRON CONTENT OF BEEF PATTIES	
	IRON (Fe)
CONTROL (ALL BEEF) ^A	10.7±0.6 ^A
EXTENDED WITH:	
TEXTURED SOY (FMS)	13.7±0.8
TEXTURED SOY + Fe AND Zn	24.3±1.2
SOY CONCENTRATE (FMS)	12.7±0.7
SOY CONCENTRATE + Fe AND Zn	23.8±1.4
SOY ISOLATE (FMS)	12.8±0.4
SOY ISOLATE + Fe AND Zn	23.4±0.7

^A± S.D. (BASED ON ANALYSES OF
ONE SAMPLE FROM EACH OF 6 PATTIES);
VALUES ARE MG/100 GM PROTEIN
(N X 6.25).

The study was conducted between December 1981 and July 1982. Compliance was excellent, as monitored by the counselors (one for each 7 or 8 households), diet records, and interviews, with only 2 individuals withdrawing from the study for non-study related, personal problems. The amount of data collected was large. Analyses of the diet records and the statistical analyses of the experimental results, for the most part, have not been completed. However, some preliminary observations can be given.

The level of absorption of the reference iron dose (ferrous ascorbate) is an excellent indicator of iron status. Changes in percentage absorption (geometric) of non-heme iron for the adult male subjects are given in Table 7. For all groups, except the control group, decreased absorptions were observed at the end of the study. This indicates, on average, an improvement in iron status. The laboratory analyses of the samples from the tests for absorption of iron from test meals containing the different beef patties, conducted at the beginning and at the end of the study, have not been completed.

TABLE 7

CHANGE IN PERCENTAGE ABSORPTION (GEOMETRIC) OF REFERENCES NON-HEME
IRON (FERROUS ASCORBATE) IN ADULT MALES CONSUMING ALL-BEEF PATTIES
OR BEEF PATTIES EXTENDED WITH SOY PROTEIN FOR 180 DAYS^A

PATTIES CONSUMED	AVERAGE CHANGE (% ABSORPTION)	NUMBER WITH DECREASED ABSORPTION	NUMBER WITH INCREASED ABSORPTION
BEEF	-4.8	6	1
PLUS SOY CONCENTRATE	-3.4	5	2
PLUS SOY ISOLATE	-0.3	4	3
PLUS TEXTURED SOY	-3.1	4	3
PLUS Fe AND Zn FORTIFIED			
SOY CONCENTRATE	-2.6	5 ^B	1 ^B
SOY ISOLATE	-3.6	6	2
TEXTURED SOY	-10.2	6	1
CONTROL GROUP ^C	+0.7	7	9

^AMORRIS ET AL. (UNPUBLISHED DATA); INITIAL AND FINAL MEANS (GEOMETRIC)
FOR ALL PARTICIPANTS WERE 12.3 AND 8.9 PERCENT ABSORPTION, RESPECTIVELY;
^BNO CHANGE IN ONE SUBJECT; ^CCONTROL GROUP CONSUMED THEIR USUAL DIETS.

We have not completed the statistical analyses of the serum ferritin values obtained. We have two sets of data. The first set is from the ferritin analyses conducted throughout the study and the second set from the analyses of all samples from each individual subject done within the same single analysis (i.e., with the same RIA "kit"). Only the first set of ferritin data has been partially analyzed. The results of these preliminary analyses are given in Tables 8-11 for the ferritin levels observed prior to the beginning (0 days) and at the end (180 days) of the feeding study. There is some risk involved in presenting data based on values for only these 2 time periods. However, with 40 mean values for each of the 4 sex-age groups (a total of 160 means), it is impractical to present values for all 5 blood sampling times. In assessing the importance of any apparent trends or changes between the values obtained at 0 and 180 days, we have considered the values obtained at the interim time periods.

Among the school lunch participants who were non-menstruating, no significant changes between the 2 time periods were observed (Table 8). This was the largest group of participants and the mean values for each sub-group thus appeared to be more consistent, than for the other 3 groups across the 5 blood sampling times. The ferritin levels of a majority of the Control Group participants decreased over the 6-month period.

TABLE 8
CHANGES IN FERRITIN LEVELS (GEOMETRIC) BETWEEN 0 AND 180 DAYS IN
SCHOOL-LUNCH NON-MENSTRUATING PARTICIPANTS CONSUMING ALL-BEEF
PATTIES OR BEEF PATTIES EXTENDED WITH SOY PROTEIN^A

PATTIES CONSUMED	AVERAGE CHANGE (NANOGRAM/ML)	NUMBER WITH INCREASED LEVELS	NUMBER WITH DECREASED LEVELS
BEEF	-0.4	8	8
PLUS SOY CONCENTRATE	-0.9	8	8
PLUS SOY ISOLATE	+0.5	5 ^B	5 ^B
PLUS TEXTURED SOY	+0.1	6	6
<u>PLUS Fe AND Zn FORTIFIED</u>			
SOY CONCENTRATE	+0.8	8 ^B	4 ^B
SOY ISOLATE	-0.2	8	6
TEXTURED SOY	-1.3	7	7
CONTROL GROUP	-2.4	8	13

^AFROM BODWELL ET AL. (UNPUBLISHED DATA); INITIAL AND FINAL MEANS (GEOMETRIC) FOR ALL GROUPS WERE 20.1 AND 19.6, RESPECTIVELY.

^BNO CHANGE IN ONE PARTICIPANT.

Results obtained for the limited number of school lunch participants who were menstruating are given in Table 9. Although not apparent from the data shown, considerable variation was observed within each sub-group. For example, the mean changes observed between 0 and 180 days for the 2 subjects consuming the non-fortified textured soy protein extended patties would appear to be large. However, for these 2 subjects, the mean value observed at day 90 was equivalent to the value observed at day 0 and the mean value observed at 180 days was almost identical to that observed at day 41. Thus, the apparent change between 0 and 180 days has little significance.

TABLE 9

CHANGES IN FERRITIN LEVELS (GEOMETRIC) BETWEEN 0 AND 180 DAYS IN
SCHOOL-LUNCH MENSTRUATING PARTICIPANTS CONSUMING ALL-BEEF PATTIES
OR BEEF PATTIES EXTENDED WITH SOY PROTEIN^A

PATTIES CONSUMED	AVERAGE CHANGE (NANOGRAM/ML)	NUMBER WITH INCREASED LEVELS	NUMBER WITH DECREASED LEVELS
BEEF	+1.3	2	1
PLUS SOY CONCENTRATE	-0.8	1	1
PLUS SOY ISOLATE	+3.0	2	1
PLUS TEXTURED SOY	-10.7	-	2
<u>PLUS FE AND ZN FORTIFIED</u>			
SOY CONCENTRATE	+6.5	2	1
SOY ISOLATE	-2.1	-	4
TEXTURED SOY	-2.0	2	-
CONTROL GROUP	-1.0	2	3

^AFROM BODWELL ET AL. (UNPUBLISHED DATA); INITIAL AND FINAL MEANS
(GEOMETRIC) FOR ALL GROUPS WERE 22.3 AND 21.2, RESPECTIVELY.

^BNO CHANGE IN ONE PARTICIPANT.

Among the menstruating adult women (Table 10), statistically significant decreases were observed for the women in the control group who were consuming their usual diets and for the women consuming the meat patties extended with the iron and zinc fortified textured soy. The women in the latter group had minimal iron stores (mean value = <14 nanogram ferritin/ml) prior to, and throughout the 180 day study. Analytical accuracy at these low levels of ferritin is low and assessing the significance of changes in the values obtained is difficult. Further, over 50% of the apparent mean decrease between 0 and 180 days occurred between the day 0 and day 41 sampling times. Excluding some severe event (such as a miscarriage or heavy bleeding), drastic changes in ferritin levels would not be expected to occur within a time-span of 45 days. In any case, the changes observed were similar in magnitude to the statistically insignificant changes observed for the women consuming the unfortified textured soy and not statistically different from the decrease observed for the women in the Control Group who were consuming their usual diets.

TABLE 10

CHANGES IN FERRITIN LEVELS (GEOMETRIC) BETWEEN 0 AND 180 DAYS IN ADULT
MENSTRUATING WOMEN CONSUMING ALL-BEEF PATTIES OR BEEF PATTIES EXTENDED
WITH SOY PROTEIN^A

PATTIES CONSUMED	AVERAGE CHANGE (NANOGRAM/ML)	NUMBER WITH INCREASED LEVELS	NUMBER WITH DECREASED LEVELS
BEEF	-0.3	2	4
PLUS SOY CONCENTRATE	-1.5	3	2
PLUS SOY ISOLATE	-4.4	1	3
PLUS TEXTURED SOY	-4.5	1	5
<u>PLUS FE AND ZN FORTIFIED</u>			
SOY CONCENTRATE	-1.8	4	3
SOY ISOLATE	+5.8	3	3
TEXTURED SOY	-4.8 ^B	1	5
CONTROL GROUP	-3.8 ^B	5	6

^AFROM BODWELL ET AL. (UNPUBLISHED DATA); INITIAL AND FINAL MEANS
(GEOMETRIC) FOR ALL GROUPS WERE 19.4 AND 19.3, RESPECTIVELY; CONTROL
GROUP CONSUMED THEIR USUAL DIETS.

^BCHANGE STATISTICALLY SIGNIFICANT AT THE 5% LEVEL.

Values for the adult men are given in Table 11. None of the observed changes were statistically significant. The change between 0 and 180 days for the men consuming textured soy extended patties appears large, but over half of this apparent change was observed between the day 0 and day 41 sampling times. Conversely, for the men consuming the fortified textured soy extended patties, the values between day 41 and day 180 were essentially constant.

TABLE 11
CHANGES IN FERRITIN LEVELS (GEOMETRIC) BETWEEN 0 AND 180 DAYS IN ADULT
MEN CONSUMING ALL-BEEF PATTIES OR BEEF PATTIES EXTENDED WITH
SOY PROTEIN^A

PATTIES CONSUMED	AVERAGE CHANGE (NANOGRAM/ML)	NUMBER WITH INCREASED LEVELS	NUMBER WITH DECREASED LEVELS
BEEF	-7.0	2	5
PLUS SOY CONCENTRATE	-1.5	2	5
PLUS SOY ISOLATE	-3.0	3	4
PLUS TEXTURED SOY	-12.0	2	5
<u>PLUS Fe AND Zn FORTIFIED</u>			
SOY CONCENTRATE	-7.2	2	5
SOY ISOLATE	-9.0	1	6
TEXTURED SOY	+6.3	4	3
CONTROL GROUP	-6.5	6	10

^AFROM BODWELL ET AL. (UNPUBLISHED DATA); INITIAL AND FINAL MEANS (GEOMETRIC) FOR ALL PARTICIPANTS WERE 63.1 AND 58.0, RESPECTIVELY; CONTROL GROUP CONSUMED THEIR USUAL DIETS.

CONCLUSIONS

All of the laboratory and statistical analyses have not been completed. However, the following preliminary observations can be made:

(1) Iron status, as reflected by the level of absorption of the reference iron dose, improved or was not deleteriously affected in the adult men consuming the 7 different types of meat patties for 6 months.

(2) On the basis of the preliminary analyses of one of the two sets of ferritin data, the ferritin levels of participants (children, women, men) who consumed soy-extended beef for 6 months were not deleteriously affected when compared to ferritin levels of similar participants consuming all-beef patties or their normal diets.

(3) These preliminary results suggest that extending ground beef with soy protein at the levels studied did not adversely affect iron utilization in the children, women or men studied.

(4) On the basis of these results, consumption of beef extended with soy protein, at the levels used in this study, by military men or women or by school lunch participants would not appear to impose a risk in these population groups.

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OUTLOOK '83



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The USDA family food plans--thrifty, low-cost, moderate-cost, and liberal--are being revised. Costs for the food plans, released each month by the Department, will reflect the foods in the revised food plans starting in 1983. This paper tells about the 1983 food plans and how and why we are revising them.

What Are Food Plans?

Food plans are sets of nutritious diets at four cost levels. Such food plans and total costs of foods they contain have been used as standards of family food use and food cost since the mid 1930's. State and private welfare offices use them to set food money allowances. Lawyers use them to establish dependency rates. The Labor Department used the three more costly food plans as the food components of their family budgets. An earlier food plan--the economy plan--is at the core of the Federal poverty thresholds. USDA uses the cost for the thrifty food plan as the basis for the coupon allotment for the Food Stamp Program.

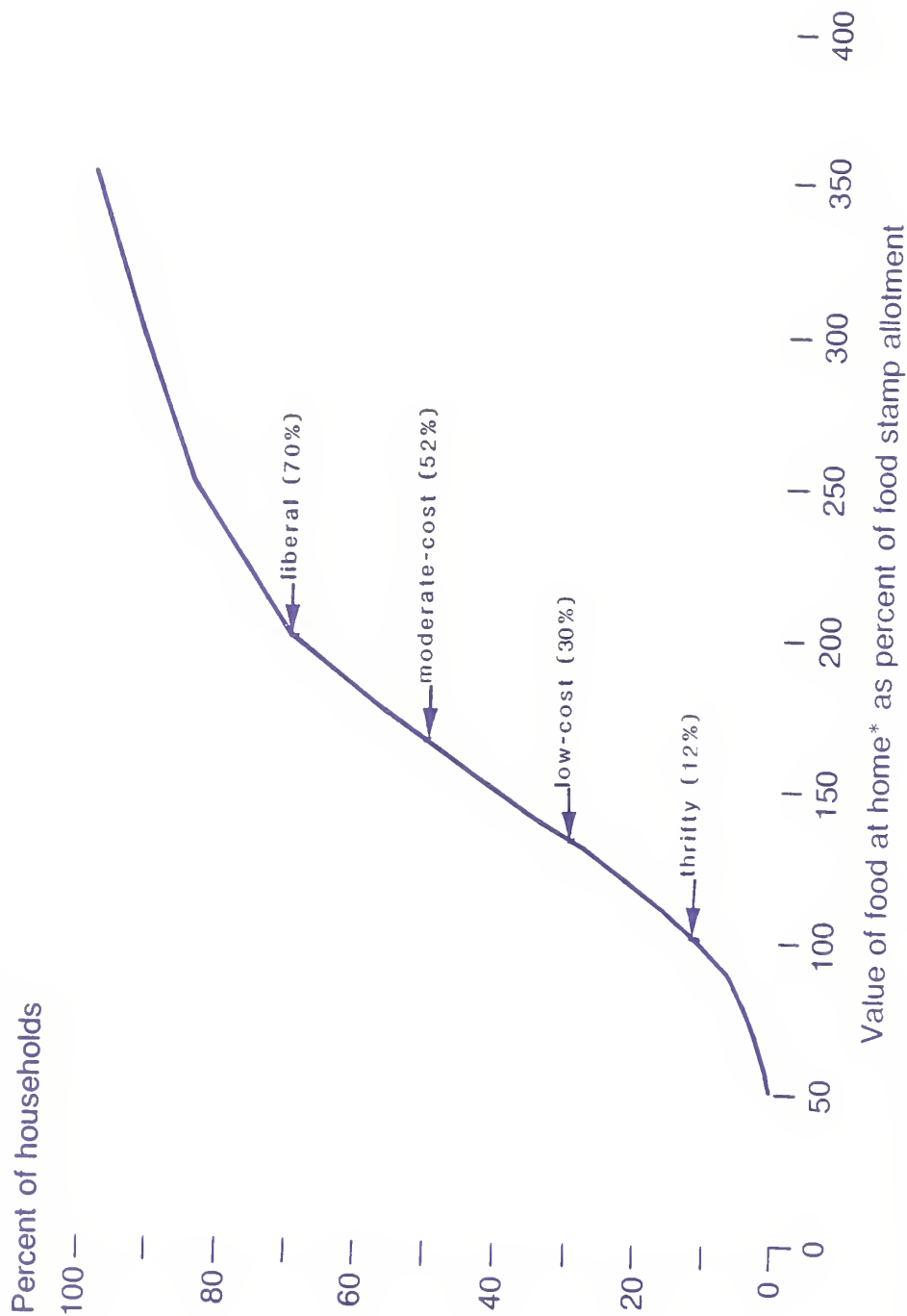
Most families will find the cost of one of the four food plans similar to the amount they spend for food. This is apparent from the distribution of households from our Nationwide Food Consumption Survey 1977-78 by the money value of food they used (fig. 1). About 12 percent of the households had food costs below the cost for the thrifty food plan; 30 percent had costs higher than liberal food plan costs. The revised food plans will cost about the same as the current food plans.

Food plans at each cost level can be put together for families of different composition. To do this, each food plan specifies the amounts of foods of different types (food groups) to buy to provide nutritious diets for men, women, and children of different ages. These amounts of food groups can be totaled for persons of the sex and age of family members to determine the plan for any family.

To follow the plan, families choose from the food groups those foods that they can store properly and prepare, that they enjoy eating, and that they can afford. Amounts used should total to amounts specified in the plan for the food group. Choices within food groups generally will not upset the nutritional quality of the diet because foods within the groups are similar to each other in nutritive value.

*The food plans are being revised by Richard L. Kerr, Linda E. Cleveland, and Andrea J. Blum under the general direction of Betty B. Peterkin and Catherine E. Woteki.

U.S. Households by Food Cost (cumulative distribution)



* Food for household members only
 USDA Nationwide Food Consumption Survey, 1977-78, 48 States

Figure 1

Why Are the Food Plans Being Revised?

The food plans now in use were developed in 1974-75. Food consumption and food price data from a 1965-66 nationwide survey were used in their development. Dietary standards used were from the Recommended Dietary Allowances (RDA) released in 1974 by the National Academy of Sciences-National Research Council (NAS-NRC).

The food plans are being revised for several reasons. Food consumption and food price data are available from the Nationwide Food Consumption Survey 1977-78. Also, dietary standards used in 1974 need updating.

In 1980, the RDA were revised, and these RDA are being used to define lower limits for food energy and nutrients in the 1983 food plans. The dietary standards for the revised plans and the rationale for their use were presented last summer at the annual meeting of the Society for Nutrition Education and will appear in the next issue of the Society's journal. Briefly they are:

- RDA for food energy, protein, six vitamins--A, B₁₂, thiamin, riboflavin, niacin, and C--and four minerals--calcium, iron, magnesium, and phosphorus.
- 80 percent of the RDA for zinc, folacin, and vitamin E. Levels below RDA were used in recognition of the limited food composition data for all three of these nutrients. Another consideration was that the U.S. food supply does not provide enough zinc and folacin to meet RDA for the population.
- 0.02 milligrams of vitamin B₆ per gram of protein--the stated basis for the 1980 RDA--rather than the value in the RDA table.
- moderate levels of fat (35 percent of energy), cholesterol (350 mg per day), caloric sweeteners (12 percent of energy), and sodium (1,600 mg/1,000 calories).

Several of these dietary substances were not controlled in developing the earlier food plans, partly because food composition data were too limited. They are zinc, phosphorus, folacin, vitamin E, cholesterol, sweeteners, and sodium.

The 1977-78 survey provided new information on household food consumption and prices. Four groups of survey households have been selected as the basis for the four food plans. For the thrifty food plan, we are using households eligible for food stamps. For the low-cost, moderate-cost, and liberal plans, we used groups of households with increasingly higher food costs per person--roughly the second, third, and fourth quartiles respectively. Food consumption information for these groups of households and their individual household members is the basis of food consumption patterns--the starting points in food plan development.

Prices paid by the groups of survey households in 1977-78, updated using changes in detailed Consumer Price Indexes for foods, are being used in revising the food plans. Estimated costs for the food plans will reflect price changes for foods in the 1983 food plans from the time of the survey to the most current month, starting in 1983.

The format of the 1983 food plans, and the food consumption patterns from which the food plans were derived, differ from those used in 1974-75. A food consumption pattern consists of average quantities (as purchased) of food by food groups that survey households used to prepare meals and snacks for people in given sex-age categories. The number of food groups was increased from 17 in the 1974-75 food plans to 31 in the 1983 food plans (see table 1). Additional food groups were needed to group foods with high and low content of certain dietary substances not considered in the earlier plans and to help deal with the increased use of commercially prepared foods.

The sex-age categories for which food plans are being developed have been reduced from 14 to 11. Food plans for the child under 1 year and for the pregnant and lactating woman are being discontinued. Also the categories for older women and men are being changed from 55 years and over to 51 years and over to conform to categories for which RDA are presented.

The food in consumption patterns for none of the four food plans as derived from the survey data met all of the dietary standards (table 2). Shortages occurred despite proportional adjustment of quantities of food groups in deriving the consumption pattern to make them provide enough food to meet the midpoint of the RDA range for energy. The severity of shortages varied slightly among patterns for the four cost levels. However, nutritional shortcomings in food consumption patterns generally appeared for the same sex-age categories across all food cost levels:

<u>Nutrient</u>	<u>Sex-age categories</u>
Below standard:	
Calcium, zinc	Children, 1-2 years; females, 12 years and over
Iron	Children, 1-2 years; females, 12-50 years
Magnesium	Males, 15-19 years; females, 12-50 years
Folacin	Females, 12 years and over
Above standard:	
Fat	Most
Sweeteners	Most
Sodium	All
Cholesterol	Primarily males, 15 years and over

How Are the Food Plans Developed?

We believe that a nutritious diet will be the most acceptable to families who use it if the diet disrupts usual food practices least. We use a computerized mathematical approach to find such a diet, or food plan.

To develop the food plan, we start with a food consumption pattern (quantities, as purchased, of 31 food groups) for a sex-age category. Each of the 31 food groups has an associated nutritive value and price per pound of food, which reflects average food use of the selected group of survey households. The computer model finds the combination of food groups at a given total cost that meets the dietary standards for the sex-age category with the least deviation from quantities of food groups in the pattern. This combination of food groups is the food plan for the sex-age category.

Allowance for some discard of edible food during preparation, as plate waste, or because of spoilage is made by increasing the dietary standards when the plans are developed. The limited information we have on household discard of food indicates that households with higher per capita food costs have higher discard. Therefore, the assumed discard allowance is least for the thrifty plan (about 5 percent of food in the plan) and greatest for the liberal plan (about 25 percent).

Food specified in each of the 1983 food plans will be sufficient to provide the RDA for calories, such as 2,000 calories a day for women and 2,700 calories for men 20-50 years of age, and to allow for some food discard. Although our surveys report intakes somewhat below the RDA calorie levels, we believe the food plans should provide the RDA.

The 1983 Food Plans

In considering the 1983 food plans, there are four relationships which may be of interest: How the 1983 food plans compare with the 1974-75 food plans they will replace; how they compare with the food consumption patterns from the 1977-78 survey; how the food plans compare by cost level; and how they compare by sex-age category.

Compared with the 1974-75 food plans, the 1983 plans for a four-person household will contain more cereal, flour, rice, pasta; dry beans and nuts; and meat, poultry, and fish (table 3). They will contain less fats and oils, sugar and sweets, and commercially prepared bakery products and grain mixtures other than bread. Some of these differences reflect changes in consumption patterns between the 1965-66 and 1977-78 surveys. Some reflect changes in existing, and additions of new, dietary standards for the food plans. Some reflect both.

For comparison of food plans and consumption patterns, and of food plans by cost level, we have translated food quantities as purchased for a week to quantities of food as served for a day. These amounts are of food as eaten, after reductions were made for inedible parts, spoilage, and plate waste.

Compared with the food consumption patterns on which they are based, all food plans for the four-person household will contain more dry beans and nuts and grain products and less soft drinks, punches, and ades; sugar and sweets; fats and oils; cheese; eggs; and meat, poultry, and fish (table 4). Such shifts are required to provide food plans that meet the dietary standards. Meeting the standards at low cost requires greater increases over consumption of foods that are economical nutrient sources, such as grain products and dry beans. These increases are accompanied by decreases of more expensive sources of nutrients, such as meat, poultry, fish, and cheese.

Food consumption patterns for the various sex-age categories are changed differently to form nutritious food plans. For example, the man's nutrient shortages are not as great as the woman's. Changes from his consumption pattern reflect the need to moderate fat in his diet, primarily through increased use of grain products and legumes and reduction in the amount of fats and oils, meat, eggs, and cheese in his usual diet (table 5).

The woman has to change her consumption in different ways to increase nutrient levels as well as reduce fat levels. Like the man, she has to increase her use of grain products. Unlike the man, she increases her use of milk and meat, poultry, and fish and decreases markedly her use of fats and sweets.

Compared with the lower-cost food plans, the more expensive ones usually will contain more cheese; meat, poultry, and fish; and vegetables and fruit. They will contain less fats and oils; dry beans; eggs; and grain products.

The general cost level for each of these 1983 food plans will be about the same as for the comparable 1974-75 food plan. However, 1983 food plans for some sex-age categories will cost more and others will cost less than earlier plans. The new plans for women over 50 years of age will be especially more costly. Also more costly will be the new plans for children 1-5 years, women 20-50 years, and men over 50 years. New plans costing less than earlier plans are those for children 9-11 years, boys 15-19 years, and men 20-50 years. These changes in food cost relationships are caused by changes in food consumption patterns and the costs associated with changing patterns to meet the dietary standards for the various sex-age categories.

Food Plan Development--An Ongoing Project

The maintenance of the USDA food plans--their development, their interpretation through publications for leaders and consumers, and the periodic estimates of their costs--is an ongoing project in the Human Nutrition Information Service. The food plans are evaluated, and revised as required, when new information becomes available on food consumption, food prices, food composition, and nutritional requirements.

The 1983 food plans will reflect the most recent, complete, and reliable information available; however, such information has limitations. As examples, current food consumption may differ from that reported in 1977-78; our Nutrient Data Bank has information gaps on the content of some nutrients in some foods; and dietary standards must be derived from research results that are not always sufficient and consistent.

An underlying premise in developing the food plans is that families might be encouraged to change the amounts of food groups they use to achieve a nutritious diet. However, we recognize that the public may have neither sufficient skills nor the desire to do so.

Each food plan is only one of many combinations of food groups that could be developed at the given cost level. Amounts of food groups in the food consumption patterns could be changed in other ways to provide nutritious diets. While such other combinations would deviate further from consumption patterns, they might be acceptable to some households.

Other food plans at similar costs could be developed if we did not assume selections of foods within food groups to be typical of those of survey households. If the foods within the groups were limited to those that are especially

inexpensive or especially nutrient dense, the quantities of food groups in the lower-cost food plans probably would not be required to deviate from food consumption to the extent the 1983 food plans will. For example, if only nonfat dry and fluid skim milk were used, the extra calories and cost of the typical assortment of milk assumed in the 1983 food plans could be used for other foods in the food plan. For purposes of establishing food plans at different costs for use nationwide, and estimating the nutrient content and cost of foods in the food plans, food within food groups used, on the average, by households with different levels of food cost is believed to be most reasonable.

As in the past, Family Economics Review will present the revised food plans. Information about the 1983 food plans, as it becomes available, can be obtained by writing the Consumer Nutrition Center, Human Nutrition Information Service, Hyattsville, Maryland 20782.

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Table 1.--Food groups for USDA family food plans, 1983¹

<u>Vegetables, fruit:</u>	<u>Meat and alternates:</u>
Potatoes	Meat, poultry, fish:
Other vegetables:	Lower-cost red meats,
High-nutrient ²	variety meats ³
Other	Higher-cost red meats,
Mixtures, mostly vegetable;	variety meats ³
condiments	Poultry
Fruit:	Fish, shellfish
Vitamin-C-rich	Bacon, sausage, luncheon
Other	meats
	Eggs
<u>Grain products:</u>	Dry beans, peas, lentils,
Breakfast cereals:	nuts:
Whole-grain/high-fiber	Dry beans, peas, lentils
Other	Nuts, peanut butter
Flour, meal, rice, pasta:	
Whole-grain/high-fiber	Mixtures, mostly meat,
Other	poultry, fish, egg,
Bread:	legume
Whole-grain/high-fiber	
Other	<u>Other foods:</u>
Other bakery products:	Fats, oils
Bakery products, not bread	Sugar, sweets
Grain mixtures	Soft drinks, punches, ades
	Coffee, tea
	Seasonings
<u>Milk, cheese:</u>	
Milk, yogurt	
Cheese	
Cream, mixtures mostly milk	

¹ Cost, nutrient composition, and use in meals were considered in grouping foods.

² Systematically selected for their relatively high nutrient-to-calorie ratios and content per serving of vitamin A, vitamin B₆, ascorbic acid, iron, and magnesium.

³ Selected by their relative costs per unit of protein provided.

Table 2.--Nutritive value¹ of food in consumption patterns² for thrifty food plan

Food component	Child				Male				Female		
	1-2 years	3-5 years	6-8 years	9-11 years	12-14 years	15-19 years	20-50 years	51 years and over	12-19 years	20-50 years	51 years and over
-----Percentage of Recommended Dietary Allowance (1980) ³ -----											
Protein	207	213	226	228	207	182	183	153	170	171	157
Vitamin A value	182	183	180	173	147	134	152	131	143	141	160
Thiamin	158	161	141	157	148	147	130	133	139	131	126
Riboflavin	190	198	183	191	170	164	147	139	162	140	134
Niacin equivalent	250	282	238	252	244	256	271	257	250	276	256
Vitamin B ₆ ⁴	127	111	108	117	111	103	89	76	79	72	71
Vitamin B ₁₂ ⁴	164	172	166	200	187	220	220	178	177	157	135
Folacin ⁴	208	137	107	102	87	84	83	72*	69*	63*	63*
Ascorbic acid	143	163	199	234	204	177	170	134	191	164	148
Vitamin E ⁴	101	102	108	130	127	108	145	139	104	138	115
Calcium	81*	100	126	126	102	110	117	98*	80*	87*	82*
Iron	69*	100	147	138	112	118	192	171	81*	76*	135
Magnesium ⁴	125	116	114	114	109	95*	110	99*	95*	96*	89*
Phosphorus	115	142	175	175	150	166	218	185	119	160	148
Zinc ⁴	67*	82	100	101	85	94	95	78*	71*	68*	63*
-----Composition of diet-----											
Food energy (kcal)	1,300	1,600	2,100	2,400	2,700	2,800	2,700	2,400	2,100	2,000	1,800
Cholesterol ⁴ (mg)	220	250	290	360*	360*	470*	520*	460*	360*	370*	330
Sodium ⁵ (mg)	2,900*	3,600*	4,600*	5,700*	6,500*	7,200*	6,900*	5,600*	5,100*	4,800*	4,000*
-----Percentage of energy-----											
Total fat	39*	38*	36*	37*	35	38*	43*	42*	38*	42*	39*
Caloric sweeteners ⁴	12	14*	18*	16*	16*	15*	13*	13*	15*	14*	14*
Protein	15	15	14	14	14	15	15	14	15	15	15

¹Nutritive value of the edible portion of food as purchased, adjusted to allow for losses in cooking for vitamins, except folacin. One-half of the drippings and trimmable fat from meat, poultry, and fish was assumed as discard.

²Estimated quantities of food used (as purchased) to prepare meals and snacks for individuals. Based on data from a special group of about 4,400 low-income housekeeping households (eligible for the Food Stamp Program) surveyed November 1977-March 1978 as part of the Nationwide Food Consumption Survey 1977-78. Quantities were adjusted proportionately to provide the Recommended Dietary Allowance (RDA) (1980) midpoint for food energy.

³RDA derived for specified sex-age categories by interpolation.

⁴Based on limited food composition data.

⁵Based on limited food composition data. Content of patterns may be unrealistically high because quantities of baking soda, salt and other seasonings are based on reported purchases; some of these items may have been purchased for non-food uses (e.g., baking soda used as a refrigerator deodorizer). Examples of sodium levels in patterns if salt and seasonings are excluded are 3,200, 2,300, 2,700, and 2,300 mg, respectively, for the man 20-50 years, woman 20-50 years, child 9-11 years, and child 6-8 years.

*NOTE: Failed to meet food plan dietary standard (i.e., RDA or more for protein and vitamins and minerals with these exceptions--80 percent RDA or more for folacin, vitamin E, and zinc; 90 percent RDA for iron for child 1-2 years old; 0.02 mg of vitamin B₆ per gram of protein; and no more than 35 percent of energy from fat, 12 percent of energy from caloric sweeteners, 350 mg of cholesterol, and 1,600 mg sodium/1,000 kcal).

Table 3.--1983 Food plans compared with 1974-75 plans
Four-person household¹

Food ²	Thrifty	Moderate-cost
-----Percent change-----		
More:		
Meat, poultry, fish	31	14
Cereal, flour, rice, pasta	27	38
Dry beans, peas; nuts	18	25
Vegetables, fruit	8	6
Less:		
Bakery products	-36	-24
Sugar, sweets	-19	-34
Fats, oils	-12	-36

¹Man and woman, 20-50 years; children, 6-8 and 9-11 years (preliminary 1983 food plans).

²Food as purchased for only food groups with major changes.

Table 4.--1983 Food plans compared with consumption patterns
Four-person household¹

Food ²	Thrifty	Low-cost	Moderate-cost	Liberal
-----Percent change-----				
More:				
Dry beans, peas, cooked; nuts	91	67	56	62
Grain products	49	55	45	43
Vegetables, fruit	5	1	9	13
Less:				
Soft drinks, punches, ades	-78	-49	-51	-52
Sugar, sweets	-21	-43	-30	-20
Fats, oils	-2	-22	-37	-33
Cheese	-41	-29	-14	-18
Eggs	-22	-18	-19	-24
Meat, poultry, fish	-37	-21	-7	-5

¹Man and woman, 20-50 years; children, 6-8 and 9-11 years (preliminary 1983 food plans).

²Food as served for only food groups with major changes.

Table 5.--Food consumption patterns and 1983 moderate-cost food plans
Food as served for a day, man and woman, 51 years and over

Food ¹	Unit	Man		Woman	
		Pattern	Plan	Pattern	Plan
Vegetables, fruit	1/2 c	5.7	6.0	5.4	5.8
Grain products	1 oz ²	7.2	10.0	5.5	6.2
Milk, yogurt	1 c	.8	.8	.7	1.0
Cheese	1 oz	1.0	.8	.7	.8
Meat, poultry, fish (boned) ³	1 oz	5.9	5.1	3.9	5.2
Eggs (per week)	no.	5.6	3.2	3.6	3.4
Dry beans, peas, cooked; nuts	1/2 c	.2	.3	.2	.2
Fats, oils	1 tbsp	3.1	2.3	2.3	1.0
Sugar, sweets	1 tbsp	4.3	4.4	2.8	2.0
Soft drinks, punches, ades	1 c	.5	.2	.5	.3

¹Excludes commercially prepared mixtures except bread and bakery products (preliminary 1983 food plans).

²1 oz of dry cereal or pasta, about 1 slice bread, and equivalent in other bakery products.

³Lean parts of meat and poultry. Includes some bacon, sausage, and luncheon meats.

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INTRODUCTION

This paper reports some findings from our analysis of the data for individual respondents from the Nationwide Food Consumption Survey of 1977-78 (NFCS). The details of selection of individuals for analysis, the definition of the variables and their construction are contained in our Final Report to the Human Nutrition Information Service. The following is a brief description of the characteristics of the individuals selected into our study population, the variables found to be associated statistically significantly with the quality of the diets, the indices used in evaluating the diets, and the food groupings we used in looking at the intake of the individuals with different qualities of nutritional intake.

1. Selection of the Study Population

Selected were household members who had complete data for age, sex, three-day food intake, were either white or Black and at least four years old and neither pregnant nor nursing nor vegetarian. From all those who met these criteria, we further selected only those who fell into one of the four major meal patterns which we had identified. This left a study population of 21,579 individuals.

2. Four Major Meal Patterns

We obtained frequency distributions of the permutations of numbers of meals reported for the three days of food intake records and found that only four permutations contained enough individuals to permit fruitful analysis. The meals were intake occasions identified as meals by the respondents. We took into account only the number of meals, not the label nor the number of items reported for the individual intake occasions. The four patterns were: 3,3,3: three meals for each of the three days of records; 3,3,2: three meals on any two days and two meals on the third day; 3,2,2: three meals on one of the three days and two meals each on the two other days; 2,2,2: two meals on each of the three days.

3. Snacking Behavior

The respondents identified some intake occasions as snacks, and we characterized them as "snackers" if they recorded one or more such intake occasions as snacks, and as "non-snackers" if no snacks at all were identified. The following table, Table 1, shows the distribution of the study population by meal patterns, sex and snacking behavior.

TABLE 1: Meal Pattern	Males Percent	Females Percent	Total Number	Percent	Percent Non-Snackers
3,3,3	65.1	63.2	13,824	64.1	28.8
3,3,2	18.2	18.6	3,973	18.4	15.2
3,2,2	8.6	9.7	1,986	9.2	16.9
2,2,2	8.2	8.4	1,796	8.3	21.0
Total	100.0	100.0		100.0	24.5
Number	9,860	11,719	21,579		5,295

4. Indices of Nutrient Quality of Reported Intakes

We developed three such indices: one reports the number of nutrients for which the 3-day average was below 60.0% of the Recommended Dietary Allowance (RDA). This is the Marginality Index (MI). Seven nutrients were considered when computing this index for respondents. The scores range from 0 to 7, indicating that none, one, two etc. of the seven nutrients considered showed a 3-day average intake below 60.0 percent of the appropriate RDA. The nutrients included consisted of those which showed more than a very few of the respondents with such marginal intake and were:

Vitamin B-6
Calcium
Vitamin A
Vitamin C
Iron
Magnesium
Vitamin B-12.

A second index considered the contribution of the macronutrients protein, fats and carbohydrates to the total caloric intake. This index was labelled PFC Index. The ranges of proportions deemed "desirable" were:

Protein 10.0 - 25.0 percent
Fats 20.0 - 35.0 percent
Carbohy-
drates 70.0 - 40.0 percent.

Our scoring system permits the identification of intakes within the ranges: For intakes within the ranges for all three macronutrients, a score of "1"; those with two macronutrients within the desirable ranges and one not in such a range, scores of "2", "3" or "4"; those with only one within the desirable range and two without, scores of "5", "6" and "7"; and finally, for those with all three not within the ranges, a score of "8". It was found that almost all with one macronutrient not in range were "off" for fats. Those who were scored as having two macronutrients "off" were almost universally those with problems for fats and carbohydrates. Other combinations amounted to about three percent. Therefore, we report only four categories: all three in balance; fats only out of balance; fats and carbohydrates out of balance; and all other permutations.

A third index consisted of combining the MI and PFC by crosstabulation and collapsing categories into 12 Nutrient Quality (NQ) groups: A through L. Table 6

shows the definitions of the twelve categories and the distribution of the study population, as well as the grouping of the categories into triads which became an analytic unit further on in our work.

5. Grouping Food Items

We developed two schemes for grouping approximately 4,000 of individual food item codes. One system grouped the items according to their major contribution to micronutrients and resulted in 13 groups. The second system considered the role of the food items as menu items and resulted in 32 groups. These different approaches resulted in categorizing milk and cheese, for example, in one group as dairy products in the first scheme, while milk was considered a beverage and constituted its own group in the second scheme.

FINDINGS

1. Intake of Micronutrients

We found that examining intakes of individual micronutrients and using the MI provided quite different information. Table 2 shows the distribution of the study population by categories of intake as % of RDA for individual nutrients and recommended energy intake (REI). Figure 1 shows the age and sex distribution of those in the population who had an MI score of "0": no marginal intake for any of the seven micronutrients considered.

The individual nutrients vary considerably in the percentage of those with marginal intake ($\leq 59.9\%$ RDA), ranging from about 35 percent for vitamin B-6 to less than one percent for protein. From Figure 1 it can be seen that the degree of marginality varies significantly by age and sex, and that females from eleven years up show much larger proportions with marginal intake than males. The micronutrients which constitute scores of "1" and higher cannot be inferred from the data in Table 2, since different diets scored as containing one or more marginal micronutrients varied in the permutations of such marginal micronutrients.

Table 3 shows the roles of the seven micronutrients in the diets of varying degree of marginality by sex. We see, for example, that iron intake is marginal for 18.9 percent of the total population (Table 2), but that iron is marginal for only 9.4 percent of those with a single marginal intake (Table 3). The data support the interpretation that individual diets tend to contain different clusters of marginal micronutrients. Table 4, shows the distribution of MI scores for the total population, and sharpens the contrast in findings between consideration of single micronutrient intakes and the MI approach.

2. The Balance of Macronutrients

The PFC score distribution by meal patterns is shown in Table 5. About 20 percent of the total study population had macronutrient intakes which fell into the desirable ratios of contributions to the total caloric intake. Undesirable fat ratios account for most of those who show undesirable ratios, whether for fats alone or fats in combination with carbohydrates.

Data not shown here demonstrated that there was no association between marginality of micronutrient intake and achieving desirable macronutrient balance of total caloric intake. Table 6 shows that those in desirable balance for each of the four triads account for about the same percentage of the triad total. For example, NQ A accounts for 18.4 percent of the 9210 in NQs A plus B plus C; NQ D is 18.8 percent of its triad, NQ G is 19.9 percent and NQ J 22.0 percent of triad NQ J, K and L.

3. Food Intakes of the Twelve Nutrient Quality Groups

We looked at the 3-day average mentions of foods in terms of food groups and the failure to mention intake of any one or more specific group. We kept some groups as defined originally for the menu item scheme: soup, legumes, cereals, starchy protein mixtures, breads, and starchy side dishes. We grouped others to achieve the following combinations: milk and cheese; juices and fruits; juices, fruits and vegetables; "meats" which contain meat, poultry and fish; "fats"; "sugars" which contain soft drinks, toppings, candies, spoon and other desserts.

A. Percentages of No Mentions of Foods by Nutrient Quality Groups

Graphic presentations for "milk and cheese," "juices and fruits," "cereals" and "sugar" groups are shown in Figures 2, 3, 4 and 5. Meats and fats are omitted here since almost every respondent mentioned at least one intake.

The graphs employ the "triads of NQs" scheme of showing the percents of each NQ which did not mention intake of any food item in the particular food group. The most striking finding is that the same pattern is shown within each triad and that only the height of the line varies. Individuals in the first triad contain fewer who report limited intakes, their selection of food items is wider. Overall, and not surprisingly, the triads of NQ groups show that the utilization of foods and food groups decreases as the triads represent increasingly larger numbers of marginal nutrients, and that overall, the diversity of the intake decreases as this marginality increases.

B. Average Mentions of Foods by Nutrient Quality Groups

The next dimension examined was the amount of intake as measured by the average number of mentions of food items by "users", those who mentioned an item in a food group once or more. Figures 6 through 11 show the findings by triads for the food groups. Shown are: milk and cheese; juices and fruits; juices, fruits and vegetables; sugar groups; meat; and fats. Among users, within each food group, the units within triads follow the same patterns of use. Except for meat and fats, generally there is a decrease in average number of mentions from NQ A through NQ L. This decrease is not linear for milk and cheese, where the second unit in the triad shows an increase over the first unit and a decrease for the third unit. In the case of meat and fats, the first unit in the triads show lower average mentions than the second and third units, even though in the case of fats the triads show decreasing average mentions from NQ A through L. For the meat group, the four NQ triads are almost identical both as to pattern and height of the curves.

4. The Effect of Independent Variables on Use and Quantity of Intake of Food Groups by Nutrient Quality Groups

Table 6 shows the distribution of the total study population for the twelve NQs. Statistical tests to determine the independence of 15 variables for the distribution among the NQs were done by using canonical correlations and redundancy covariations. The variables considered were: sex, age, meal patterns, snacking behavior, race/ethnicity, family composition, size of household,, census region, urban/ rural status, education of head of household, working status of female head of household, Poverty Index, being on a special diet, eating meals out, weight status. Only age, sex, meal patterns and snacking behavior were found to be independent by either of these two statistical tests.

Children, and particularly the youngest, did best in terms of NQ classification and were found in NQs A and B twice as often as their proportion in the total population. Those 11 through 15 years of age were distributed bimodally with proportionately larger percentages in the extreme categories and relatively fewer in the middle categories. As age increased, the proportions of those in the less desirable categories increased in respect to their percentages in the total population. This distribution is most pronounced for the adult population from 23 to 50 years of age. Those older than 50 achieved more desirable intakes but did not reach the levels observed by children. It should be borne in mind that children's intakes were reported by others, presumably their mothers, and that these intakes may not reflect reality entirely, but we have no way of assessing the impact of this factor.

Females under 11 years did as well as males of those ages, but from then on, females showed larger proportions in the less desirable categories of diets than did males. The four meal patterns showed an interesting association, those in pattern 3,3,3 did better than any of the other three meal patterns, with proportionately more respondents in NQs A through E and fewer in NQs I through L. The other three patterns showed respectively less desirable distributions as the total number of meals in the patterns decreased.

Snacking behavior also proved to be associated: those who did not snack did not as well proportionately as those who did snack, with more of them in NQs K and L particularly. Among the snackers, those who reported three or more snacks were more frequently found in NQs A through D, and less frequently in NQs J through L.

Examination of the relationship of 3-day average %REI and NQ distribution points to the enormous problems of achieving intake that is "balanced desirably" for micronutrient and macronutrient intakes. Total caloric intake was found to be associated with both aspects of nutrient quality, but it was NOT a simple association. The higher the %REI the larger the proportions of the population in the least "nutriently marginal" NQs; but also, the larger the proportions of the populations within the ABC triad in the less desirably balanced B and C groups. Equally, the "marginal" or low %REI intake does not unilinearly correlate with either of the two aspects of quality of diets examined. There are lower proportions of individuals in NQ K and L for those with less than 60 percent REI than in B and C for those with ≥ 100 %REI. In other words, and as mentioned before, the degree of marginality for nutrients is not associated with PFC ratios.

The data show that the quality of diets is not dependent on single elements: it is not simply the failure to eat specific food items, nor the absolute amount of specific food items. It seems instead, that the food intake as a totality must be considered in two dimensions: the adequacy of the diversity to provide the different nutrients as well as the distribution of the macronutrients. It is the kinds of foods as well as amounts in relation to total intake that must be considered when planning meals or eating.

5. Conformance With the 4 Food Groups Guidance Scheme and Quality of Diets

Utilizing our 13 food group system, we classified respondents by the number of mentions for each of the four food groups over 3 days and examined distributions of categories of conformance by distribution among the NQs. We limited the categories to five as shown in Table 7. Group 1: 6 or more from the milk and meat groups, and 12 or more from the fruits and vegetables and grains groups; 2: less than in group 1 but at least 5, 5, 10 and 10 mentions respectively; 3: less than in 2, but at least 4, 4, 8, 8; group 4: less than in 3, but at least 3, 3, 6 and 6; group 5: less than in group 4. Work by Dr. Eleanor Pao has shown that mentions usually indicate an intake which equals a serving as defined by the four food groups guidance scheme.

For the total study population, three percent fell into group 1, and 53 percent into group 5. Further, it can be seen that adherence to the guidance scheme does not automatically result in above marginality intake for micronutrients since individuals in the conforming intake category (group 1), were found in NQs D through L. Equally, those in the fifth group were found in all 12 NQs. Proportionately group 1 respondents were found more frequently in NQ A than those from other intake groups, but, equally important was the finding that almost 56 percent of group 1 were found in NQ B, and an additional 14 percent in NQ C. The other groups showed progressively fewer individuals in NQs B and C. At the other end of the NQs, a complete inversion for the five groups was found. For example, percentages in NQ J ranged from less than one percent for groups 1 and 2 to nine percent for the fifth group.

DISCUSSION

When marginality of nutrient intake and ratios of contribution to total caloric intake are both considered, the percentages of the total study population falling into the category indicating no marginal intakes and desirable ratios were about eight percent. The largest proportions were found to have problems with the contribution of fats to total intake. The intake of the population was not found to conform to the recommendations based on the four food groups approach, and further, no simple association was found with the quality of the diets and adherence. The four food groups approach does not address macronutrient ratios of total caloric intake.

Based on the findings from our approach it would appear desirable to reexamine nutrition guidance schemes in order to assist different age and sex groups in the population to achieve satisfactory intakes of micronutrients and desirable ratios of macronutrients within different recommended energy intakes.

TABLE 2

PERCENT DISTRIBUTION OF THREE-DAY AVERAGE
INTAKES AS PERCENT RDA FOR ELEVEN NUTRIENTS AND
CALORIES (N=21,579)

NUTRIENT	≥ 100.0	PERCENT RDA			TOTAL
		99.9- 80.0	79.9- 60.0	≤ 59.9	
PROTEIN	90.9	5.7	2.5	.8	100.0
PHOSPHORUS	73.8	14.6	8.2	3.3	100.0
RIBOFLAVIN	68.7	15.6	10.7	5.1	100.0
THIAMIN	56.5	21.2	14.8	7.5	100.0
VITAMIN B-12	68.4	12.8	10.3	8.5	100.0
VITAMIN C	61.6	9.8	10.0	18.7	100.0
IRON	45.9	16.5	18.8	18.9	100.0
MAGNESIUM	23.2	24.1	29.6	23.1	100.0
VITAMIN A	49.6	12.8	14.3	23.3	100.0
CALCIUM	32.6	17.1	20.6	29.7	100.0
VITAMIN B-6	19.1	19.1	27.0	34.8	100.0
CALORIES*	23.4	29.1	31.1	16.4	100.0

* PERCENT OF RECOMMENDED ENERGY INTAKE

FIGURE 1

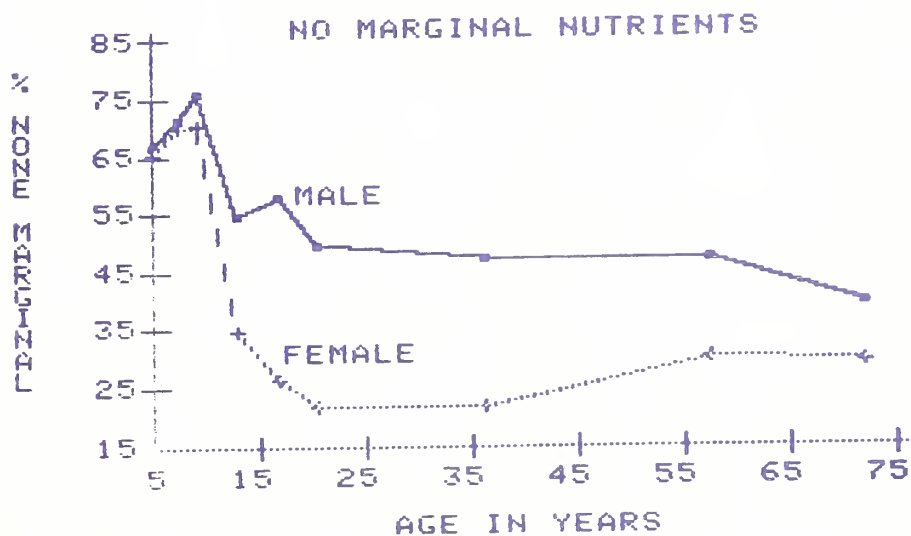


TABLE 3 PERCENT OF INTAKES BY SEX WITH ONE TO SIX MARGINAL NUTRIENTS
BY NUTRIENTS INVOLVED

NUTRIENT	NUMBER OF MARGINAL NUTRIENTS					
	ONE		TWO		THREE	
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
VITAMIN B-6	23.6	30.4	27.3	40.4	60.3	52.0
CALCIUM	20.4	31.5	26.4	37.4	42.9	40.6
VITAMIN A	27.2	8.3	16.9	46.5	46.5	32.1
VITAMIN C	16.5	10.2	13.1	31.2	19.5	24.4
IRON	3.2	14.5	9.4	34.3	16.6	24.0
MAGNESIUM	8.0	3.1	5.3	7.1	31.7	21.4
VITAMIN B-12	1.1	2.0	1.6	3.2	7.4	5.6
NUMBER	1777	2125	3902	1100	1535	2635
					759	1279
						2038

NUTRIENT	NUMBER OF MARGINAL NUTRIENTS					
	FOUR		FIVE		SIX	
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
VITAMIN B-6	82.7	90.7	88.2	95.9	95.6	95.7
CALCIUM	71.3	74.1	73.2	86.7	85.1	85.5
VITAMIN A	76.5	44.4	54.5	90.5	66.4	72.8
VITAMIN C	55.1	36.5	42.4	72.1	55.3	58.3
IRON	18.4	62.0	48.3	37.5	79.8	68.6
MAGNESIUM	84.7	67.4	72.8	93.7	85.4	87.6
VITAMIN B-12	11.3	24.9	20.6	23.8	34.3	31.5
NUMBER	515	1120	1635	315	872	1187
					103	593
						696

TABLE 4 Distribution of Intakes by Number of Marginal Nutrients

# Nutrients ≤59.9% RDA	Percent
None	42.7
One	18.1
Two	12.2
Three	9.4
Four	7.6
Five	5.5
Six	3.2
All (7)	1.3

Total 100.0 (21,579)

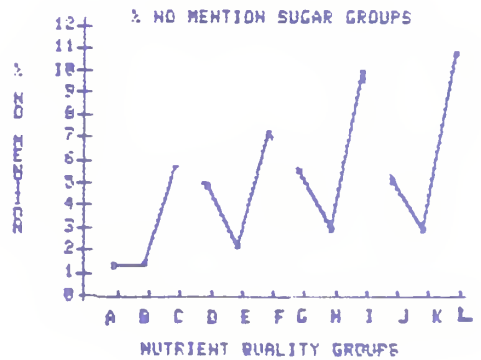
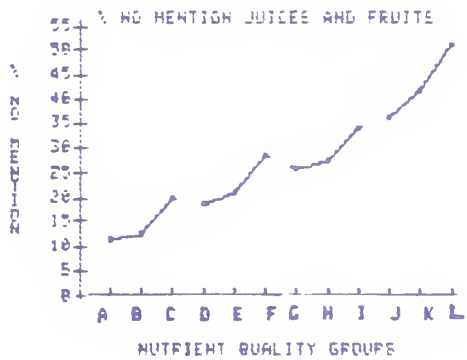
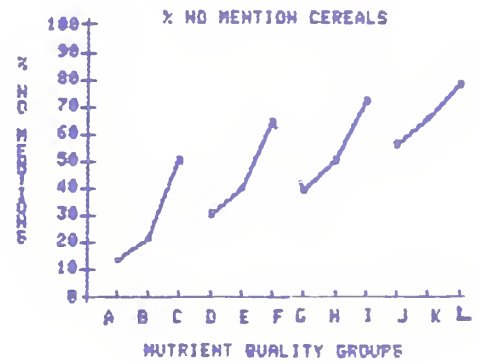
TABLE 5 Percent Distribution of Intakes by Protein-Fat-Carbohydrate (PFC) Score

PFC Score	Meal Patterns				Total	
	<u>3,3,3</u>	<u>3,3,2</u>	<u>3,2,2</u>	<u>2,2,2</u>	<u>Percent</u>	<u>Number</u>
All 3 in Balance	20.1	18.4	19.0	19.1	19.6	4236
Unbalanced						
Fats	48.9	44.3	40.9	35.6	46.2	9976
Fats & Carbohydrates	28.6	34.1	35.8	40.5	31.2	6738
All Others	2.4	3.2	4.3	4.8	2.9	629
Total	100.0	100.0	100.0	100.0	100.0	21579

TABLE 6 Distribution of Intakes by Nutrient Quality (NQ) Groups

NQ Group	# Marginal Nutrients	PFC Balance	Population	
			<u>Number</u>	<u>Percent</u>
A	0	all 3 balanced	1696	7.9
B	0	1 not balanced	4926	22.8
C	0	≥2 not balanced	2588	12.0
D	1	all 3 balanced	732	3.4
E	1	1 not balanced	1745	8.1
F	1	≥2 not balanced	1425	6.6
G	2	all 3 balanced	524	2.4
H	2	1 not balanced	1139	5.3
I	2	≥2 not balanced	972	4.5
J	≥3	all 3 balanced	1284	6.0
K	≥3	1 not balanced	2402	11.1
L	≥3	≥2 not balanced	2146	9.9

Figures 2, 3, 4, 5 Percent of No Mentions of Food Group by Nutrient Quality Group



Figures 6,7,8,9, 10 and 11 Percent of Users with Average or More Mentions of Food Groups by Nutrient Quality Group

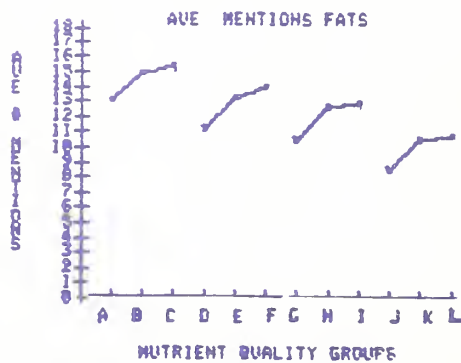
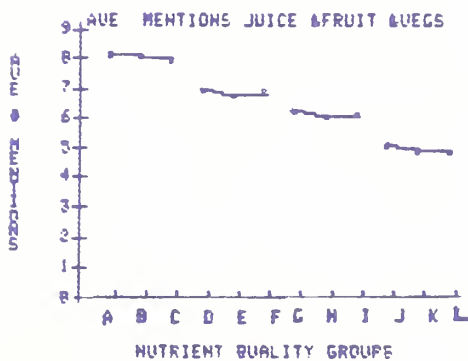
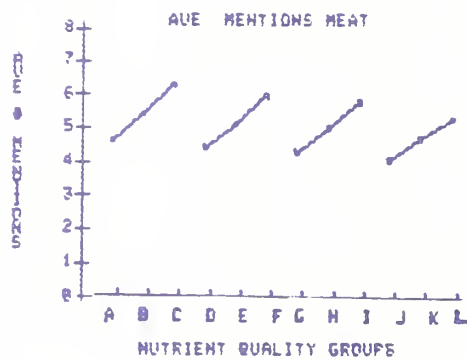
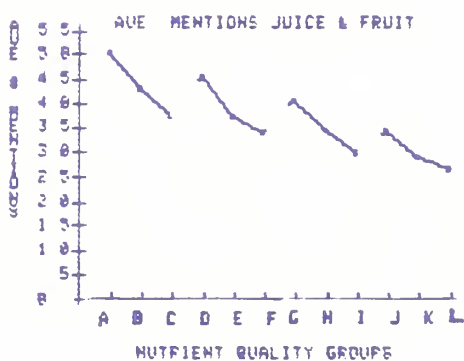
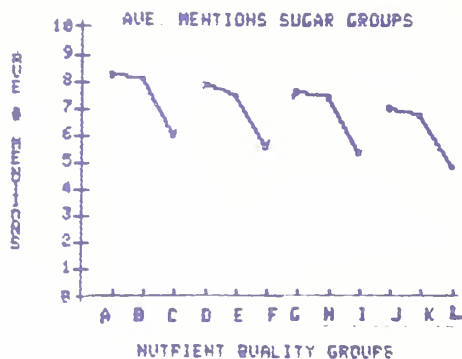
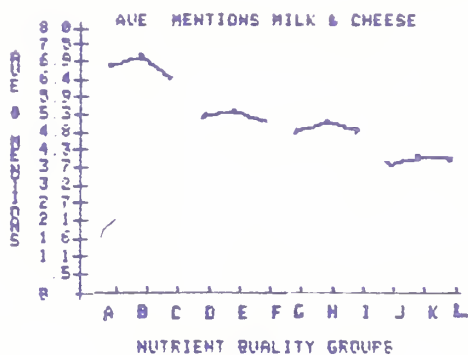


TABLE 7 Distribution of Intakes by Mentions of Four Food Groups and Nutrient Quality Groups (N=21,579)

PERCENT DISTRIBUTION OF RESPONDENTS BY THREE DAYS' TOTAL SERVINGS FOR FOUR FOOD GROUPS* AND TWELVE NUTRIENT QUALITY CATEGORIES (N=21,579)												
MENTIONS FOR EACH OF FOUR FOOD GROUPS*	NUTRIENT QUALITY CATEGORIES											
	A	B	C	D	E	F	G	H	I	J	K	TOTAL
												PERCENT NUMBER
≥6, ≥12, ≥12	17.1	55.6	14.2	2.0	5.2	1.2	1.1	.9	.3	.8	1.2	.3 100.0 648
≥5, ≥10, ≥10	15.2	45.7	16.9	3.1	8.2	3.0	.7	2.4	1.3	.9	1.9	.7 100.0 1381
≥4, ≥8, ≥8	11.9	37.0	16.3	3.1	9.0	5.1	2.2	4.6	2.1	1.7	4.2	2.8 100.0 3065
≥3, ≥6, ≥6	9.6	28.9	14.2	4.2	9.7	6.1	2.7	5.6	3.9	3.5	7.0	4.7 100.0 5038
≤3, ≤6, ≤6	4.6	11.8	9.2	3.2	7.3	8.0	2.7	5.9	6.1	9.1	16.5	15.8 100.0 11447
TOTAL	7.9	22.8	12.0	3.4	8.1	6.6	2.4	5.3	4.5	6.0	11.1	9.9 100.0 21579
PERCENT NUMBER	1696	4926	2588	732	1745	1425	524	1139	972	1284	2402	2146 21579

PERCENT DISTRIBUTION OF RESPONDENTS BY THREE DAYS' TOTAL SERVINGS FOR FOUR FOOD GROUPS* AND TWELVE NUTRIENT QUALITY CATEGORIES (N=21,579)												
MENTIONS FOR EACH OF FOUR FOOD GROUPS*	NUTRIENT QUALITY CATEGORIES											
	A	B	C	D	E	F	G	H	I	J	K	TOTAL
												PERCENT NUMBER
≥6, ≥12, ≥12	6.5	7.3	3.6	1.8	1.9	.6	1.3	.5	.2	.4	.3	.1 3.0 648
≥5, ≥10, ≥10	12.4	12.8	9.0	5.9	6.5	2.9	1.9	2.9	1.9	1.0	1.1	.5 6.4 1381
≥4, ≥8, ≥8	21.5	23.0	19.3	13.1	15.8	10.9	12.6	12.5	6.6	4.1	5.3	4.1 14.2 3065
≥3, ≥6, ≥6	28.4	29.5	27.6	28.7	27.9	21.7	26.0	24.7	20.1	13.6	14.8	11.1 23.3 5038
≤3, ≤6, ≤6	31.1	27.3	40.5	50.5	47.9	63.9	58.2	59.4	71.3	80.9	78.5	84.2 53.0 11447
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 21579
PERCENT NUMBER	1696	4926	2588	732	1745	1425	524	1139	972	1284	2402	2146 21579

* FOOD GROUPS: 1-MILK GROUP
2-MEAT GROUP
3-FRUITS & VEGETABLES
4-GRAINS

TALK by John S. Akin, Jeff S. Bass, David K. Guilkey, Pamela S. Haines, and Barry M. Popkin (presenter) University of North Carolina at Chapel Hill at the 1983 Agricultural Outlook Conference, Session 25, Washington, D.C.



For Release: December 1, 1982

During the late 1960s and 1970s, the issues of poverty and undernutrition claimed national prominence. While nutritional imbalances and deficiencies were clearly not limited to low income persons, a disproportionate number of the low income were undernourished. A large proportion of the poor were children of school age. In order to address the nutrition and poverty issues, new federal programs were developed and adjustments were made in existing federally sponsored programs. As examples, the National School Lunch Program (NSLP), in operation since 1946, was authorized to increase federal per-meal reimbursements so that free and reduced-price meals could be served to greater numbers of poor children. The School Breakfast Program (SBP), originally a pilot program targeted to children in schools in low income districts, was made a permanent program and funding was made available to all schools that chose to offer the breakfast program. Until recently, however, no study based on a nationally representative sample of children has assessed how participation in the NSLP and the SBP affects the nutrient intake of school age children. In a series of studies, we have examined the ways in which school lunch and school breakfast participation affect the nutrient intakes of children at all income levels.

Nutritional Status of School Age Children

To determine whether public expenditures for school feeding programs can be justified on nutritional grounds, it is important to review the nature and extent of nutritional imbalances and undernutrition among school age children. Several national surveys have provided dietary, clinical, and/or biochemical measurements useful for assessing nutritional status. These include the 1977-78 Nationwide Food Consumption Survey (NFCS) and the Health and Nutrition Examination Survey of 1971-74 (HANES I). As table 1 shows, based on the HANES I data, serious indications of nutritional deficiencies--the presence of clinical symptoms--are generally present only for a small proportion of the school age population. Teenagers below the poverty level, however, are the exception. Between 6 and 19% of all poor teenagers were found to have clinical symptoms of calcium and niacin deficiency. In general, among HANES I children, nutrient deficiencies were more prevalent among the children from low income families, among blacks, and among teenagers. Milder subclinical deficits are widespread in the population. Deficiencies such as

these may have long term effects, ranging from limiting of growth (particularly for the adolescent) and impairing of the quality of dental health, to contributing to limited attention spans.

 Table 1. Prevalence of clinical symptoms indicative of nutrient deficiency (Percentage of children in the category suffering clinical symptoms)

	6-12 years		12-18 years	
	<u>Below Poverty</u>	<u>Above Poverty</u>	<u>Below Poverty</u>	<u>Above Poverty</u>
Calcium				
whites	5.7%	4.5%	14.8%	12.5%
blacks	7.6	6.4	18.9	12.4
Vitamin A				
whites	7.9	5.9	10.6	6.5
blacks	14.7	2.6	7.6	5.1
Vitamin C				
whites	3.6	4.5	29.1	9.0
blacks	7.8	1.0	27.8	19.2
Niacin				
whites	4.2	3.9	6.1	7.2
blacks	2.8	11.0	18.6	10.4

Nutrient intake studies of school age children generally support the findings of the clinical studies. Nutrients most likely to be consumed in inadequate quantities are energy, iron, calcium, riboflavin, vitamin B6, and magnesium. Although average intakes of Vitamin A and Vitamin C usually exceed the Recommended Dietary Allowance (RDA), excessive consumption by some students obscures the very low intakes of others. Among children of ages 6 to 11 in our NFCS samples, one quarter or more consumed less than two-thirds of the age-adjusted RDAs for energy, Vitamin B6, and Vitamin A. Even more of the teens had poor diets. One quarter or more of all sample teenagers ages 12 to 18 consumed less than 60 percent of the RDA for Vitamin B6, Vitamin A, iron, and calcium. The diets of teenage girls were consistently lowest in their nutrient adequacy ratings.

Presence of clinical symptoms indicative of nutrient deficiencies and a widespread underconsumption of selected nutrients within the school age population indicate that a public health problem does exist. Although it is currently popular to attempt to link child health practices, such as excessive consumption of energy, saturated fat, cholesterol, and sodium, to the probability of developing any

number of adult chronic disease states, it is important to emphasize that nutrient underconsumption may tend to have important and immediate developmental and behavioral consequences.

Research Framework

We have conducted a series of analyses to determine the ways participation in the NSLP and SBP affects the nutrition of school age children (1). Results discussed below are based on multivariate, statistically controlled regression analyses. The samples consist of school age children selected from the individual files of the Basic and Low Income samples of the Nationwide Food Consumption Survey (NFCS), 1977-78, and the Survey of Food Consumption in Low-Income Households, 1979-80. In each study, individual average one-day nutrient intakes are the primary measures we compare among children. In general, results presented here are for children in the Basic Sample of the 1977-78 NFCS. We statistically control for school meal program participation and other factors thought to affect levels of nutrient consumption among children. These control factors include demographic, socioeconomic, and individual child characteristics--such as age, sex, ethnic background, and anthropometric measures--all of which may influence food consumption patterns. The analyses are presented for two groups of children, those 6 to 11 years old and those 12 to 18 years old.

School Lunch Participation

Children 6 to 11 years old. School Lunch Program participation makes an important contribution to the diets of children of all ages. When we control for all other factors thought to influence consumption, so that the only difference between students is school lunch participation, younger children who participate in the school lunch program consume more of every nutrient during a 24-hour period than do children who do not participate. The magnitude of the impact for each of the younger children can be quite sizable. For example, as shown in Table 2, for children of all incomes, school lunch participants consume about 6 percent more of their energy requirement than do nonparticipants who eat other kinds of lunch. Participants consume about 20 percent more of the RDAs for calcium, iron, and Vitamin B6, and about 25 percent more of the Vitamin C and riboflavin (not shown) RDAs. School lunch participants also consume 67 percent more of the Vitamin A RDA than do children who eat other kinds of lunches, such as a la carte meals or brown bag lunches from home. Over the same one-day time period, children who eat other, non school lunches do not seem to consume any more calcium, iron, or Vitamin B6 than do children who eat no lunch. Therefore, school lunch participation is particularly important for children ages 6 to 11. Not only does participation increase intakes, but three of these nutrients--energy, Vitamin A, and Vitamin B6--have been identified as particular nutritional problems for younger children.

 Table 2. Selected School Lunch Program Benefits, as a
 Percentage of the Recommended Dietary Allowance,
 Children Ages 6-11, NFCS Basic Sample, 1977-78

	<u>Benefits relative to children eating other kinds of lunches*</u>	<u>Benefits relative to children who eat no lunch</u>
Energy	+6%	+15%
Calcium	+19	+12
Vitamin B6	+21	+23
Iron	+19	+20
Vitamin A	+70	+28
Vitamin C	+21	+67

* For example, over a 24-hour period, children who participate in the school lunch program consume 6 percent more of the energy RDA than do children who eat other kinds of lunches and 15 percent more than children who eat no lunch.

Adolescents ages 12 to 18 years. Teenagers also benefit substantially from School Lunch Program participation. Over a day's time, when all other factors affecting consumption are accounted for, school lunch participants consume more of all nutrients than do nonparticipants. As seen in Table 3, nutrients frequently consumed in inadequate quantities by teenagers, teenage school lunch participants consume about 7 percent more of the niacin RDA (2) and 15 percent more of the RDAs for calcium and Vitamin B6. Similarly, older participants show the benefit of school lunch consumption with intakes of riboflavin and Vitamin A which are 24 to 44 percent of the RDA higher than the intakes of nonparticipants.

Because clinical symptoms of calcium and Vitamin A deficiencies have been noted among teenagers, and dietary intakes of calcium, riboflavin, Vitamin A, and Vitamin B6 are particularly low for a sizable proportion of this population, school lunch participation obviously fills important nutritional gaps for this group.

Table 3. Selected School Lunch Program Benefits as a Percentage of the Recommended Dietary Allowance, Teenagers Ages 11-14, NFCS Basic Sample

	<u>Benefits relative to children eating other kinds of lunches</u>		<u>Benefits relative to children who eat no lunch</u>	
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>
Energy	+8%	+10%	+18%	+23%
Calcium	+16	+17	+26	+26
Niacin	+7	+10	+18	+23
Riboflavin	+24	+30	+32	+39
Vitamin B6	+13	+13	+19	+20
Iron	+7	+7	+15	+15
Vitamin A	+35	+44	+30	+38
Vitamin C	+11	+11	+36	+36

Low Income Children. When we look at the impact of school lunch participation for children at differing levels of income, it becomes obvious that the school lunch program makes a particular difference for children of poorer households. For example, young school lunch participants in households with incomes below the poverty index not only consume more energy than do similar children who eat other kinds of lunches, but the size of energy benefit is twice as large (10 percent of the RDA) as the energy impact for similar participants from households with higher incomes (5 percent of the RDA). Similarly, poor, younger NSLP participants consume approximately 22 percent more of the Vitamin B6 RDA than do children eating other types of lunches.

The nutrient intake benefits of school lunch participation are even greater for low income teenagers than for their younger counterparts. Table 4 presents differences between teens in high and low income households. Low income teenage school lunch participants consume approximately 728 kilocalories per day more than do poor adolescents who eat other types of lunches. This is about one-third of the teenage girls' energy requirement and about one-fourth of the male RDA. (In contrast, at higher income levels the energy impact is only 169 kilocalories.) From our research, it is impossible to determine if this sizable energy impact contributes to overweight among low income teenagers, or even if it can be said with certainty that school lunch participation provides food and nutrients where none

would have been consumed in the absence of the program. It is clear, however, that overall diets of the poorest teenagers are greatly helped by school lunch participation. Low income teenage participants consume over 40 percent more of the Vitamin B6 RDA than do nonparticipants--a finding of particular nutritional significance among teenage girls who traditionally have very low intakes of this nutrient. Similarly, low income teenage school lunch participants consume nearly 30 percent more of the iron RDA than do nonparticipants, in contrast to a 6 percent benefit for teen participants in higher income households. Since iron deficiency is a major public health problem, particularly among adolescents, these nutrient benefits can make important health contributions. Vitamin A benefits of school lunch participation are also significant and impressive. Higher income students add about 20 percent of the Vitamin A RDA when they consume school lunch. For low income teens, participants consume nearly 80 to 95 percent more of the RDA than do other poor teenagers who eat other forms of lunch.

 Table 4. Selected School Lunch Program Benefits, as a
 Percentage of the Recommended Dietary Allowance, NFCS
 Basic Sample, 1977-78

	<u>Poor Teenagers*</u>	<u>Higher Income Teenagers*</u>
<u>Females</u>		
Energy	33%*	8%
Vitamin B6	40	11
Iron	28	6
Vitamin A	97	25
<u>Males</u>		
Energy	27%	6%
Vitamin B6	40	11
Iron	28	6
Vitamin A	77	20

* These results compare the 24 hour intakes of school lunch participants to the intake of similar income teenagers who consume other kinds of lunches.

School Breakfast Participation

Children 6 to 11 years old. Children who consume school breakfast also have diets superior to those who eat other kinds of breakfast, but the relative nutritional impacts are not as consistently significant as those between school lunch participants and those eating other kinds of lunches. Over a day's time, younger children who participate in the School Breakfast Program consume more

Vitamin B12, riboflavin, and Vitamin A than do children who eat other forms of breakfast.

Although we have no scientific research results to support this contention, it is almost certain that the availability of a School Breakfast Program increases the frequency with which some children eat a breakfast. For the younger child who eats a SBP breakfast, but would not have eaten a breakfast in the absence of the program, the nutritional benefits are important. Breakfast consumption increases the day's nutrient intake of every nutrient, relative to intakes of the group of younger children who eat no breakfast. For energy, the impact is nearly one-quarter of the RDA. The Vitamin B6 and iron intakes of breakfast eaters are one-third of the requirements greater than those of nonbreakfast eaters. Vitamin C intakes are increased by nearly the size of the entire Vitamin C RDA. The calcium consumption impact approaches 40 to 45 percent of the calcium RDA.

Clearly, Vitamin A, energy, Vitamin B6, Vitamin C, and calcium are nutrients underconsumed by large portions of the preteen population. For children who normally eat other types of breakfast, of the above nutrients, School Breakfast Program participation appears to contribute to improved Vitamin A nutriture. For children who eat a SBP breakfast where breakfast would not have been eaten otherwise, the nutritional implications of participation are much more important.

Table 5. Selected School Breakfast Program Results, as a Percentage of the Recommended Dietary Allowance NFCS Basic Sample, 1977-78

	<u>Benefits relative to children eating other kinds of breakfast</u>	<u>Benefits relative to children who eat no breakfast</u>
<u>Younger Children</u>		
Energy	3%*	23%
Calcium	28	72
Vitamin B6	31	72
Iron	31	66
Vitamin A	348	380
Vitamin C	38	127
<u>Older Children</u>		
Energy	15%	35%
Calcium	44	75
Vitamin B6	15	38
Iron	23	42
Vitamin A	21	16(1)
Vitamin C	32	91

* These percentages are calculated from results with various levels of statistical significance.

Adolescents ages 12 to 18 years. Over a one-day period, when we control for other factors affecting teen nutrient intake, adolescent School Breakfast Program participants consume more protein, calcium, riboflavin, magnesium, thiamin, and iron than do teens eating other kinds of breakfasts. The calcium (45 percent of the RDA), riboflavin (65 percent of the female RDA and about 50 percent of the male RDA), and iron (nearly 25 percent of the RDA) intake impacts have particular nutritional status importance. When one considers that these differences are for teens who differ only in that one eats a school breakfast and one eats a nonschool breakfast, the magnitudes of the effects are even more impressive.

As with the younger age group, if a teenager consumes a school breakfast, but would not have eaten breakfast were the program not available, the nutritional implications are even more comprehensive. Relative to teenagers who do not consume breakfast, School Breakfast Program teenage participants consume more of every nutrient except Vitamin B12 and Vitamin A. For this group, who may be encouraged by the presence of the SBP to eat breakfast, daily riboflavin intakes are nearly 100 percent of the RDA greater; with calcium intakes, 75 percent; Vitamin C intakes, at least 50 percent; iron intakes, 40 percent; Vitamin B6 intakes, 35 percent; and niacin intakes, 30 percent greater than for comparable teens who do not eat any breakfast. While the growth and development implications of these additions are important for both sexes, given the larger proportion of teenage females with inadequate dietary intakes, these impacts are particularly significant for the females.

Low income children. As with school lunch participation, the nutrient intake impacts of school breakfast participation are greatest among children from low income households. As examples, among low income children ages 6 to 11, participants consume over 10 percent more of the energy RDA than do children eating other kinds of breakfasts. Similarly, low income SBP participants consume 25 percent more of the RDA for calcium, 30 percent of the riboflavin RDA, 15 percent of the Vitamin B6 RDA, and 85 percent more of the Vitamin C RDA, relative to daily intakes of children who eat other types of breakfast.

As is the case with higher income students, daily nutrient intakes are augmented for low income younger students who eat a school breakfast but would not eat breakfast if the program were unavailable. Adolescents from poorer households also receive substantial nutritional benefits from School Breakfast Program participation. Relative to intakes of other low income teens who consume other kinds of breakfasts, over a one-day period, SBP participants consume substantially more calcium, Vitamin B6, riboflavin, and Vitamin A. When availability of a SBP encourages a low income teen to eat a breakfast, daily intakes of every nutrient increase. Teens in this low income category consume larger quantities of Vitamin B6, Vitamin A, and Vitamin C relative to higher income teens.

Nutrition Implications

Participation in the School Lunch and School Breakfast Programs results in increased nutrient intakes. These increases are particularly important for nutrients such as energy, calcium, riboflavin, iron, Vitamin B6, and Vitamin A, for which we have either clinical evidence of deficiency within the school age population or dietary survey evidence indicating consumption below recommended levels by significant segments of the school age population. However, the nutritional effects of school meals participation can also be judged by determining how participation affects the overall diet quality, or the nutritional balance of a diet. Since each nutrient has a metabolic function, independent of intakes of other nutrients, consistent low intake of even one nutrient can have deleterious health effects.

In our analyses, we have identified factors which influence the level of nutrient consumption for the nutrient considered least adequate for each surveyed child in terms of the percentage of the RDA. This RDA for the least adequate nutrient is termed the minimum nutrient adequacy ratio. Selected results of this analysis are presented in Table 6. Across all samples and for all ages, participation in a school lunch program raises the level of the minimum nutrient adequacy ratio by 14 to 17 percentage points, relative to that of students who eat other types of lunches. In general, consumption of a nonschool lunch is not associated with a significant change in the minimum nutrient adequacy ratio. Only for adolescents in the Basic sample is nonschool lunch consumption associated with any increase in the level of consumption of the most deficient nutrient.

School Breakfast Program participation is even more important in helping children to achieve balanced diets. Within our Basic sample, the level of the minimum nutrient adequacy ratio is approximately 30 percent higher for SBP participants than for children who eat other types of breakfasts. If, in fact, availability of a school breakfast program encourages school age children to eat breakfast who normally would not, the nutritional benefits are even more striking. Among children of all incomes, the minimum nutrient adequacy ratio of SBP participants is approximately 50 percent higher than that of children who do not eat breakfast. This result is found for both age groups. By any interpretation, School Breakfast Program participation and School Lunch Program participation improve the nutrient balance of diets of children of school age. Not only does school meal program participation augment intakes of many individual nutrients, but such participation increases nutrient intakes for those nutrients most in need of supplementation--nutrients normally consumed in inadequate supply by school age children.

 Table 6. Impact of School Meals Program Participation on Levels
 of Minimum Nutrient Adequacy Ratio

	<u>Younger Children</u>	<u>Older Children</u>
SBP participation benefits relative to children eating other types of breakfast	30%*	34%
SBP participation benefits relative to children eating no breakfast	58%	52%
NSLP participation benefits relative to children eating other types of lunch	17%	14%
NSLP participation benefits relative to children eating no lunch	19%	21%

* For example, the least adequately consumed nutrient (Minimum Nutrient Adequacy Ratio) is 30 percent of the RDA greater for School Breakfast Program participants than for children who eat other kinds of breakfasts.

Summary and Implications

Participation in the School Breakfast and School Lunch Programs is associated with improvements in nutrient intakes frequently found to be underconsumed by children of school age. Participation is particularly important for low income children of all ages, for whom the nutritional benefits are even greater than for children in higher income households.

If one evaluates the effectiveness of the school meals program on the basis of improvements in the dietary quality of participating children relative to children who are not participating--particularly for low income children--our analysis provides strong evidence that participation is associated with increases in nutrient intakes for some of the most needed nutrients. For younger children, particular needs for increases in energy, Vitamin B6, and Vitamin A intakes are met by program participation. Among teenagers, participation helps to fill several nutritional gaps--notably for calcium, Vitamin B6, Vitamin A, and iron. Where program availability results in a child's consuming a meal where a meal would otherwise not have been consumed, a substantial nutritional benefit is seen. This benefit is particularly evident where School Breakfast Program availability encourages consumption of breakfast. Strong evidence that participation in either the NSLP or SBP helps to improve the nutritional balance of diets of school age children is provided by the

fact that the level of consumption for the least adequately consumed nutrient is significantly increased.

While relatively more significant individual nutritional benefits are realized by low income children, children in higher income levels also receive important benefits. Because some children at all income levels underconsume selected nutrients, program participation helps to fill the needs of all groups of children. Serious nutritional problems exist among segments of the adolescent population. That adolescent participants particularly benefit from the school meals programs is added evidence that school meals programs are a viable and effective means for improving the health of the nation's children.

Footnotes

1. For complete results, the interested reader may refer to:

Popkin, B., Akin, J., Haines, P., MacDonald, M. and D. Spicer (1980) "Nutrition Program Options for Maternal and Child Health." Institute for Research on Poverty, University of Wisconsin, Madison, Special Report Series No. SR28.

Akin, J., Guilkey, D., Haines, P., and B. Popkin (1982) "The Nutrient Impact of School Feeding: A. The National School Breakfast Program, B. The National School Breakfast and Lunch Program Interactions." Completed for USDA Contract #53-3244-9-191.

Akin, J., Guilkey, D., and B. Popkin (1982) "Impact of the School Lunch Program on Nutrient Intake: A Switching Regression Analysis." (Under final journal review).

Akin, J., Guilkey, D., Haines, P., and B. Popkin (1982) "The Impact of the School Lunch Program on Nutrient Intakes." School Food Service Research Review (in press for 1983 winter edition).

2. This RDA refers to niacin and we have data only for preformed niacin.

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INTRODUCTION

The use of convenience foods allows consumers to transfer food preparation from the kitchen to the processor. During the past few decades, a myriad of convenience foods, particularly canned foods, frozen items, and mixes, have been introduced into the marketplace. In 1976, expenditures on processed products amounted to nearly \$50 billion. Of this total, \$8.6 billion were spent on ready-to-cook items, \$7.6 billion on ready-to-heat items, and \$33.3 billion on ready-to-eat products.¹

A paucity of economic and nutritional information exists regarding convenience and nonconvenience foods used by U.S. households. In an attempt to add to this sparse store of knowledge, research has been conducted by an interdisciplinary team composed of nutritionists and agricultural economists. The purposes of this research were: (1) to develop operational definitions of convenience and nonconvenience foods, (2) to determine nutrient contributions of the various food classes used by U.S. households, and (3) to ascertain key determinants of convenience and nonconvenience food use according to their money value and share of food dollar.

DATA SOURCE

The source of the data was the household phase of the 1977-78 Nationwide Food Consumption Survey (NFCS), a stratified probability sample of approximately 15,000 households in the 48 conterminous states. This information refers to food used in the household in a 7-day period and includes not only what was eaten by household members and guests but also food that was discarded or eaten by pets. The data, therefore, should not be interpreted as representative of food actually eaten.

CLASSIFICATION SCHEME

Each food code in the household portion of the NFCS was assigned a convenience or nonconvenience status according to the following definitions:

1. Basic convenience - foods where processing is more related to a preservation method than ease of preparation; foods with a single or limited number of ingredients; foods with time or energy inputs but not culinary expertise built in.
2. Complex convenience - foods which have a high level of time saving and/or energy inputs and culinary expertise built in; multi-ingredient prepared mixtures.

¹Livingston, G.E. and C.M. Chang, "Commercial Production of Ready-To-Serve Food in the United States", In How Ready Are Ready-To-Serve Foods? K. Paulus, Editor, Basel: S. Karger, 1978, pp. 35-48.

3. Manufactured convenience - foods which have no home-prepared counterpart.
4. Nonconvenience - fresh (unprocessed) foods; home frozen or home canned or home preserved food items; and ingredient foods. Ingredient foods are processed food products used in food preparation, usually in the most basic form in their category, that either cannot be or are not commonly prepared in the home.

These definitions were based, in part, on work by Traub and Odland². Examples of foods in each of the four categories are shown in Table 1.

Of more than 4000 food codes used in the survey, 32.7 percent were basic convenience, 28.8 percent were complex convenience, 3.5 percent were manufactured convenience, and 35.0 percent were nonconvenience. An individual food code referred to a single food item in some cases and to clusters of similar foods in other instances. Therefore, the distribution of food codes does not reflect precisely the proportion of foods in the classes.

Convenience and nonconvenience foods were ranked on the number of households which reported using them during the survey week. The top 10 convenience food items were (in descending order): white bread (enriched) cola soft drinks, saltine-type crackers, peanut butter, meat frankfurters, frozen orange juice concentrate, bologna, catsup, processed American cheese, and powdered instant coffee. The top 10 most frequently reported nonconvenience foods (in order) were: granulated white sugar, fresh whole white potatoes, whole milk, fresh lettuce (crisphead varieties), fresh large eggs, fresh apples, fresh tomatoes, fresh onions, stick margarine, and fresh bananas.

NUTRIENT CONTRIBUTIONS OF CONVENIENCE AND NONCONVENIENCE FOOD CLASSES

Mean food energy and nutrients per nutrition unit per day were computed to determine the nutrient contribution of each convenience and nonconvenience class of foods used by the households. The number of nutrition units in a household was the sum of the recommended dietary allowance (RDA) for that nutrient for persons eating in the household (adjusted for meals eaten away from home) divided by the RDA for the adult male.

Contributions of food energy (kilocalories) by the convenience and nonconvenience classes were: 15 percent from basic convenience, 23 percent from complex convenience, 7 percent from manufactured convenience, and 55 percent from nonconvenience foods (Table 2). Proportions of nutrients provided by nonconvenience foods were somewhat comparable (50-65 percent) to the proportion of kilocalories, except that 42 percent of carbohydrate and thiamin and 71 percent of vitamin B₁₂ were from this food class.

The distribution of nutrients provided by the convenience classes was variable. For example, basic convenience foods on the average provided 25 percent of the vitamin A and 42 percent of the vitamin C; complex convenience food contributions of these vitamins were only 11 and three percent, respectively. Manufactured convenience foods represented a smaller proportion of food items than the other food classes and thus lower percentages of most nutrients in the foods used by the households. However, manufactured convenience foods provided as much vitamin B₆ as that provided by

²Traub, L. G. and D. Odland, "Convenience Foods and Home-Prepared Foods: Comparative Costs, Yield, and Quality," Agricultural Economic Report #429, USDA, Economics, Statistics, and Cooperative Service (August 1979).

Table 1. SELECTED FOODS IN CONVENIENCE AND NONCONVENIENCE CLASSES

Basic Convenience	Complex Convenience	Manufactured Convenience	Nonconvenience
Processed cheese	Cheese balls	Imitation cheese spreads	Natural cheeses
Dry milk and canned condensed milk	Frozen desserts containing milk	Soy base infant formula	Fluid whole and skim milk
Soft tub margarine	Salad dressings		Cooking oils; stick margarine; butter
Quick cooking and instant cereals	Biscuit mix	Ready-to-eat breakfast cereals	Regular cooking oatmeal
Self-rising flour and cornmeal	Pancake, cake, and cookie mixes	Saltine and soda crackers	Flour; cornmeal; rice, macaroni
Dry bread crumbs	Ready-to-eat and commercially frozen breads, biscuits, pies, cakes, doughnuts, and cookies	Breakfast toaster pastry; breakfast bars	Home frozen pies, cakes, cookies, and waffles
Commercially canned and frozen meat, poultry and fish	Hot dogs, bologna and other luncheon meats; commercially frozen breaded fish	Canned meal replacement or supplement	Fresh eggs; fresh and home frozen meat, poultry, and fish
Whipped honey	Commercially prepared jam, jelly; chocolate, coconut and nut candies	Gum drops; jelly beans; dietetic candy	Brown and white sugar; honey; home preserved jam and jelly
Commercially prepared french fries	Potato chips		Cooked, fresh, and home canned potatoes
Commercially frozen and canned vegetables and vegetable juices	Commercially frozen vegetables with sauce		Fresh, home canned, and home frozen vegetables; dried peas and beans
Commercially canned and frozen fruits and fruit juices	Commercially canned fruit pie filling		Fresh, home frozen, and home canned fruits
Powdered instant coffee and tea	Beer and wine	Gin and rum	Bean or ground coffee and loose leaf or bag tea
Commercially canned ades, punches, drinks, and fruit nectar	Root beer	Soft drinks	Home canned fruit nectar
Olives	Commercially prepared pickles, catsup, relishes		Home prepared pickles and relishes
Shelled nuts; peanut butter	Ready-to-eat, commercially canned and frozen entrees and side dishes; commercially canned, frozen, and dehydrated soups		Nuts, in shell Home frozen and home canned mixtures including soups

Table 2. MEAN NUTRIENT LEVEL PER HOUSEHOLD MEMBER^a PER DAY
FOR CONVENIENCE AND NONCONVENIENCE FOOD CLASSES

Nutrient	Basic convenience		Complex convenience		Manufactured convenience		Nonconvenience	
	Mean	%	Mean	%	Mean	%	Mean	%
Food energy (kilocalories)	576 (391) ^b	15	889 (501)	23	278 (231)	7	2112 (1041)	55
Protein (g)	21.1 (18.8)	16	20.9 (13.0)	16	3.9 (3.9)	3	82.6 (38.6)	64
Fat (g)	19.4 (17.9)	13	29.6 (20.4)	20	3.6 (4.7)	2	96.5 (53.4)	65
Carbohydrate (g)	55.6 (44.7)	17	97.6 (54.8)	28	43.0 (36.2)	13	140.2 (44.2)	42
Calcium (mg)	195.3 (211.0)	18	182.0 (117.0)	17	31.6 (39.5)	3	661.6 (393.3)	62
Iron (mg)	2.70 (3.28)	17	3.13 (2.09)	19	2.02 (2.22)	12	8.44 (5.25)	52
Magnesium (mg)	106.7 (78.8)	21	81.9 (57.9)	16	33.9 (43.7)	7	278.2 (141.7)	56
Phosphorus (mg)	346.7 (294.3)	19	273.5 (195.8)	16	91.2 (101.4)	5	1080.8 (513.0)	60
Vitamin A (I.U.)	1655 (1498)	25	726 (807)	11	806 (914)	12	3507 (2320)	52
Thiamin (mg)	0.20 (0.28)	14	0.35 (0.31)	24	0.29 (0.40)	20	0.61 (0.53)	42
Riboflavin (mg)	0.19 (0.36)	9	0.33 (0.29)	15	0.32 (0.45)	15	1.31 (0.86)	61
Preformed niacin (mg)	6.60 (5.73)	19	6.37 (4.13)	18	4.43 (5.13)	13	17.19 (10.41)	50
Vitamin B ₆ (mg)	0.17 (0.23)	11	0.11 (0.18)	7	0.29 (0.41)	18	1.04 (0.60)	65
Vitamin B ₁₂ (mcg)	0.88 (3.31)	14	0.62 (1.06)	10	0.35 (0.80)	5	4.64 (6.27)	71
Vitamin C (mg)	64.3 (64.3)	42	5.3 (7.7)	3	7.2 (10.4)	5	75.2 (65.2)	50

^aHousehold member is "nutrition unit" defined as the sum of the RDA for that nutrient for persons eating in the household (adjusted for meals eaten away from home) divided by the RDA for the adult male; fat and carbohydrate are based on 21-meal equivalents

^bStandard deviation in parentheses

the other two convenience classes. This class also contributed significant proportions of other B vitamins - thiamin, riboflavin, and preformed niacin.

Pearson product-moment correlation coefficients indicated that, with the exception of calcium, vitamin A, and carbohydrate, nutrient level per nutrition unit was positively associated with the share of the food dollar allocated to nonconvenience foods (Table 3). Although in most cases statistically significant, the magnitudes of the respective relations were relatively small, ranging from 0.0198 for magnesium to 0.1141 for iron. With some exceptions, nutrient level per nutrition unit was negatively associated with the share of the food dollar allocated to convenience classes. However, similar to the relations for nonconvenience foods, the correlation coefficients, although generally statistically significant, were comparatively small.

Nutrient Densities and Nutrients Per Dollar

Mean nutrient densities and mean nutrients per dollar of convenience and nonconvenience classes of foods used by households were computed (Tables 4 and 5). Nutrient density was defined as nutrients per 1,000 kilocalories. Nutrients per dollar were computed as the ratio of each nutrient in the food classes used by households to the dollar value of those food classes. Tests of hypotheses concerning the equality of mean nutrient densities and mean nutrients per dollar for the convenience and nonconvenience classes were made using one-way analysis of variance. Tests of all possible pairwise differences for each nutrient were made using Duncan's Multiple Range Test. To compensate for the substantial sample sizes, the significance level chosen was 0.01. With a few exceptions, pairwise differences in mean nutrient densities and mean nutrients per dollar among the four food classes were statistically different for each nutrient.

The belief held by many consumers that processed foods are expensive sources of low levels of nutrients was not confirmed by nutrient densities and nutrients per dollar. With few exceptions the mean cost of the nutrients was lower for convenience foods than for nonconvenience foods. No single food class was consistently the best source of all nutrients per 1,000 kilocalories. The mix of food items and the prevalence of use of specific foods within the classes contributed, in part, to the nutrient densities of the food classes.

Complex convenience foods provided the most kilocalories per dollar. Fresh and frozen meats and cheese and milk products in the basic convenience and nonconvenience food classes contributed to high protein densities and high levels of protein per dollar. Basic convenience foods also provided a high level of protein per dollar. Fat content of convenience foods was lower than that of nonconvenience foods, perhaps because untrimmed fresh meats and table and cooking fats were classified as nonconvenience items. On the other hand, on a per unit basis fat in the nonconvenience class was less expensive than in the convenience classes.

Carbohydrate density and level of carbohydrate per dollar were higher for the convenience food classes than for the nonconvenience food class. As expected, the chief and least expensive source of energy in the manufactured convenience class was carbohydrate. A large proportion of the foods in this class such as ready-to-eat cereals, candies, and soft drinks, contain low levels of fat and protein and high levels of carbohydrate.

Table 3. PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS OF NUTRIENT LEVEL PER HOUSEHOLD MEMBER^a AND SHARE OF FOOD DOLLAR FOR CONVENIENCE AND NONCONVENIENCE FOOD CLASSES

Nutrient	Basic convenience	Complex convenience	Manufactured convenience	Nonconvenience
Food energy	-0.0479	-0.0152 ^b	0.0015 ^b	0.0418
Protein	0.0029 ^b	-0.0818	-0.0799	0.0869
Fat	-0.1120	-0.0056 ^b	-0.0297	0.0913
Carbohydrate	-0.0222	0.0488	0.0558	-0.0415
Calcium	0.0472	-0.0180 ^b	-0.0227	-0.0099 ^b
Iron	-0.0212 ^b	-0.1131	-0.0552	0.1141
Magnesium	0.0272	-0.0430	-0.0213 ^b	0.0198 ^b
Phosphorus	0.0116 ^b	-0.0709	-0.0584	0.0646
Vitamin A	0.1258	-0.0470	0.0105 ^b	-0.0568
Thiamin	-0.0699	-0.0418	0.0276	0.0638
Riboflavin	-0.0642	-0.0296	0.0243	0.0530
Preformed niacin	-0.0002 ^b	-0.0798	-0.0276	0.0659
Vitamin B ₆	-0.0796	-0.0516	0.0325	0.0749
Vitamin B ₁₂	0.0072 ^b	-0.0246	-0.0261	0.0227
Vitamin C	0.1197	-0.1402	-0.0557	0.0381

^aHousehold member is "nutrition unit" defined as the sum of the RDA for that nutrient for persons eating in the household (adjusted for meals eaten away from home) divided by the RDA for the adult male

^bNot statistically different from zero at the 0.01 level

TABLE 4. MEAN NUTRIENT DENSITIES^a FOR CONVENIENCE AND NONCONVENIENCE FOOD CLASSES

NUTRIENT	BASIC CONVENIENCE	COMPLEX CONVENIENCE	MANUFACTURED CONVENIENCE	NONCONVENIENCE
Protein (g)	38.23 (20.35) ^b	24.97 (6.18)	15.25 (9.22)	42.56 (11.53)
Fat (g)	40.09 ^c (21.73)	40.06 ^c (13.49)	15.13 (11.23)	56.35 (12.30)
Carbohydrate (g)	125.70 (56.14)	129.65 (35.67)	196.63 (41.49)	82.21 (31.52)
Calcium (mg)	452.17 (336.93)	274.46 (110.01)	144.42 (121.51)	445.12 (243.75)
Iron (mg)	7.72 (8.37)	5.59 (2.15)	12.06 (8.53)	6.17 (1.85)
Magnesium (mg)	229.13 (201.27)	100.29 (44.44)	138.29 (140.48)	150.53 (58.16)
Phosphorus (mg)	788.79 (345.69)	430.05 (147.22)	452.22 (409.03)	699.23 (204.14)
Vitamin A (I.U.)	3546.40 (4254.39)	867.87 (1087.26)	3417.00 (3429.18)	1923.16 (1405.47)
Thiamin (mg)	0.32 (0.34)	0.40 (0.30)	1.07 (1.12)	0.27 (0.19)
Riboflavin (mg)	0.30 (0.50)	0.36 (0.25)	1.24 (1.31)	0.65 (0.36)
Preformed Niacin (mg)	12.46 (12.10)	7.30 (2.98)	17.28 (14.25)	8.26 (3.61)
Vitamin B ₆ (mg)	0.30 (0.34)	0.12 (0.17)	1.22 (1.37)	0.57 (0.24)
Vitamin B ₁₂ (mcg)	1.83 (6.63)	0.78 (1.44)	1.47 (2.87)	2.66 (3.94)
Vitamin C (mg)	162.43 (172.07)	7.55 (12.55)	34.63 (39.34)	47.06 (42.77)

^aNutrient density = nutrients per 1,000 kilocalories

^bStandard deviation of households in parentheses

^cValues in the same row not statistically different at the 0.01 level on the basis of Duncan's Multiple Range Test

TABLE 5. MEAN NUTRIENTS PER DOLLAR FOR CONVENIENCE AND NONCONVENIENCE FOOD CLASSES

NUTRIENT	BASIC CONVENIENCE	COMPLEX CONVENIENCE	MANUFACTURED CONVENIENCE	NONCONVENIENCE
Food Energy (kilocalories)	1092.96 (671.76) ^a	1656.03 (621.99)	1471.67 (686.61)	1258.22 (410.21)
Protein (g)	37.23 (21.11)	40.65 (18.12)	23.95 (18.59)	50.80 (13.19)
Fat (g)	45.15 (42.56)	66.28 (33.47)	24.06 (23.93)	70.68 (26.83)
Carbohydrate (g)	138.10 (123.42)	217.06 (109.39)	290.80 (136.58)	106.55 (63.62)
Calcium (mg)	486.31 (506.67)	461.13 (269.52)	203.86 (183.36)	535.33 (304.13)
Iron (mg)	7.67 ^b (9.48)	9.35 (5.17)	18.39 (15.59)	7.44 ^b (2.50)
Magnesium (mg)	213.42 (122.72)	160.01 (83.46)	201.39 (217.17)	179.11 (60.42)
Phosphorus (mg)	842.94 ^b (740.08)	700.99 (372.40)	640.39 (586.39)	840.21 ^b (267.34)
Vitamin A (I.U.)	3248.52 (2924.90)	1282.95 (1328.54)	5150.36 (6081.49)	2198.21 (1258.96)
Thiamin (mg)	0.39 (0.64)	0.72 (0.70)	1.68 (1.95)	0.36 (0.27)
Riboflavin (mg)	0.35 (0.61)	0.62 (0.52)	1.92 (2.25)	0.81 (0.47)
Preformed Niacin (mg)	11.82 ^b (8.36)	11.99 ^b (6.37)	26.75 (25.95)	9.70 (3.38)
Vitamin B ₆ (mg)	0.31 (0.36)	0.17 (0.24)	1.87 (2.45)	0.68 (0.28)
Vitamin B ₁₂ (mcg)	1.51 (4.91)	1.17 (1.98)	2.16 (4.94)	3.16 (4.35)
Vitamin C (mg)	148.16 (141.93)	11.26 (14.09)	52.86 ^b (70.38)	52.57 ^b (36.82)

^aStandard deviation in parentheses

^bValues in same row not statistically different at the 0.01 level on the basis of Duncan's Multiple Range Test

The high nutrient densities and high nutrients per dollar of calcium in nonconvenience and basic convenience foods might be expected, since milk and most cheeses, concentrated sources of calcium, were included in these categories. Manufactured convenience foods provided more iron per thousand kilocalories and per dollar than did the other food classes. Fortification of ready-to-eat cereals may account for this high level. The highest nutrient densities and nutrients per dollar for magnesium were found in the basic convenience class, which included frozen and canned vegetables and fruits. Phosphorus was provided at the highest density and at the least cost in the basic convenience and nonconvenience food classes.

Manufactured convenience foods provided high nutrient densities at relatively low cost for vitamin A, thiamin, riboflavin, preformed niacin, and vitamin B₆, probably a result of fortification of ready-to-eat grain foods. Basic convenience foods also provided a high nutrient density of vitamin A at a low cost. Additionally, nutrient density and nutrients per dollar of vitamin C in the basic convenience food class were substantially higher than in the other food classes. Frozen and canned vegetables and fruits, sources of these vitamins, were in this convenience category. Vitamin B₁₂, found almost exclusively in animal foods, was present at the highest ratio to kilocalories and at the lowest cost in nonconvenience foods.

MONEY VALUE AND SHARE OF FOOD DOLLAR

To enhance the understanding of food purchase patterns in the United States, this research investigated the nature and the magnitude of the influence of various socioeconomic and demographic variates on the money value and the share of the food dollar for convenience and nonconvenience foods. The particular attributes included region, urbanization, income class, household size in terms of 21-meal equivalents, season, origin and race of respondent, occupation of the household head, and age, education, and employment status of the household manager (meal planner). The impact of the various socioeconomic and demographic characteristics is likely to reflect, in part, differences in tastes and preferences, culture, and infrastructure of households. The statistical analysis entailed the use of analysis of covariance -the blending of analysis of variance and regression analysis.

On the average, the money value of all food, nonconvenience foods, and convenience foods used per household was \$46.69, \$25.69, and \$21.00, respectively. The average weekly money value of basic convenience, complex convenience, and manufactured convenience foods was \$8.48, \$9.04, and \$3.48, respectively. On the average, households spent approximately 55 percent of the food dollar on nonconvenience foods, 18 percent on basic convenience foods, 19 percent on complex convenience foods, and 7 percent on manufactured convenience foods, shares similar to percentages of food energy contributed by the respective food classes.

The major determinants of convenience and nonconvenience foods according to share of food dollar are exhibited in Table 6. Generally, white, non-Spanish households located outside the South in central city and suburban areas in which the household manager was less than 34 years of age, employed (part-time or full-time), and at least a high school graduate, allocated significantly larger portions of their food dollar to convenience foods than other types of households. However, Spanish, nonwhite households located in the South in nonmetropolitan areas in which the household manager is at least

TABLE 6. MAJOR DETERMINANTS OF CONVENIENCE AND NONCONVENIENCE FOODS ACCORDING TO SHARE OF FOOD DOLLAR

Determinant	Basic convenience Class	Complex Convenience Class	Manufactured Convenience Class	Nonconvenience Class
Geographical Region	Northeast West	North Central Northeast West	North Central South West	South
Urbanization	Central City	Suburban Central City	Suburban Central City	Nonmetropolitan
Season	Winter Fall Spring	Winter	NSD ^a	Summer
Race	Non-black	White	White	Non-White
Income Class	NSD	NSD	High-income classes (Over \$30,000, \$20,000 to \$29,999)	Low-income classes (Under \$5,000 \$5,000 to \$9,999 \$10,000 to \$14,999)
Occupation of Household Head	White-collar	Blue-collar	NSD	NSD
Education of Household Manager (Meal Planner)	At least a high school graduate	NSD	At least a high school graduate	Not a high school graduate
Age of Household Manager (Meal Planner)	21 to 34 over 65	Less than 21 21 to 34	Less than 21 21 to 34	Over 65 35 to 64
Employment Status of Household Manager (Meal Planner)	NSD	Employed	Employed	Unemployed
Origin	Non-Spanish	Non-Spanish	NSD	Spanish
Household Size in 21-Meal Equivalents	Yes	NSD	NSD	Yes

^aNo statistically significant difference(s)

35 years of age, unemployed, and not a high school graduate, allocated larger portions of their food dollar to nonconvenience foods than other types of households. Also, households typically expended significantly larger shares of their food dollar on convenience foods in the winter and nonconvenience foods in the summer than in the other seasons. Interestingly, household size and household income had seemingly imperceptible influences on the share of food dollar allocated to convenience foods. But, low-income households and households relatively large in size in terms of 21-meal equivalents generally expended larger shares of their food dollar for nonconvenience foods. With few notable exceptions, the aforementioned results also held with respect to money value of convenience and nonconvenience foods.

Given information on household size in 21-meal equivalents and socioeconomic and demographic characteristics, the estimated statistical models were used to make predictions of weekly money value and share of food dollar of convenience and nonconvenience foods. Various socioeconomic and demographic profiles were constructed to examine behavioral patterns. To illustrate, two scenarios are presented.

Scenario I

Region (South), urbanization (nonmetropolitan), season (summer), race of respondent (Black), income class (under \$5,000), occupation of household head (blue-collar), education of household manager (not a high school graduate), age of household manager (35-64), employment status of household manager (unemployed), origin of respondent (Spanish).

Scenario II

Region (Northeast), urbanization (suburban), season (winter), race of respondent (white), income class (over \$30,000), occupation of household head (white-collar), education of household manager (high school graduate), age of household manager (21-34), employment status of household manager (part-time or full-time employment), origin of respondent (non-Spanish).

A household with five 21-meal equivalents that fits the specification of the first scenario would spend \$35.68 on nonconvenience foods (roughly 59 percent of the food dollar), \$9.25 on basic convenience foods (15 percent), \$11.53 on complex convenience foods (19 percent), and \$4.23 on manufactured convenience foods (approximately 7 percent). On the other hand, households with the same household size that fits the specification of the second scenario would spend \$47.04 on nonconvenience foods (51 percent of the food dollar), \$17.72 on basic convenience foods (19 percent), \$19.44 on complex convenience foods (21 percent), and \$7.95 on manufactured convenience foods (approximately 9 percent). The tremendous wealth of detail in the classifications of the socioeconomic and demographic variates permits the construction of many unique profiles. Such profiles are useful for market research programs by the food industry and for planning relevant educational materials for population groups.

SUMMARY

Food items used by households in the 1977-78 Nationwide Food Consumption Survey were classified to reflect the convenience or nonconvenience status of each item: (1) basic convenience, (2) complex convenience, (3) manufactured convenience, and (4) nonconvenience.

Basic convenience and nonconvenience foods provided more protein and calcium per dollar and per 1,000 kilocalories than complex convenience and manufactured convenience foods. The highest level of fat per 1,000 kilocalories was present in nonconvenience foods, the class which included untrimmed fresh meats, most milk and cheese products, and table and cooking fats. As the share of the food dollar spent for convenience foods increased, there was an associated small decrease in the nutrient level per nutrition unit for food energy and all nutrients except calcium, vitamin A, and carbohydrate.

Approximately 55 percent of the dollar for food at home was spent on nonconvenience foods, 18 percent on basic convenience foods, 19 percent on complex convenience foods, and 7 percent on manufactured convenience foods. In general, white, non-Spanish, households, located outside the South in central city and suburban areas, in which the meal planner was less than 34 years of age, employed, and at least a high school graduate allocated larger portions of their food dollar to convenience foods than did other households.

SUSTAINING U. S. AGRICULTURAL PRODUCTIVE CAPACITY

I am honored to take part in this Outlook Conference, especially since this is the first year I have been asked to speak at the Conference. In the company of so many distinguished academic and professional experts, I am more than a little humble.

In fact, I was surprised at first that for this session your two main participants are not academic experts in conservation, research and technology, but instead both come from the policy-making arena. Congressman Brown and I are accompanied here today by a distinguished resource economist, Dr. Emery Castle of Resources for the Future, and by an outstanding USDA civil servant in the field of conservation program evaluation, Gordon Nebeker. However, it is Congressman Brown and myself who will deliver the main presentations here this morning.

Conservation, Research, Technology
Programs Raise Policy Questions,
Carry Political Weight

How is it that your committee, with all the technical and professional experts that abound in the fields of conservation, research and technology, chose instead to invite two persons to this panel who live by the political sword? Without endeavoring to put myself in the same league as Congressman

Remarks by Richard D. Siegel, Deputy Assistant Secretary for Natural Resources and Environment, U.S. Department of Agriculture, at Session 26, "Conservation, Research and Technology", December 1, 1982, 8:15 a.m., Room 104-A, Administration Building

Brown, I did serve for a number of years as a staff member in the House and Senate so, like him, my Washington roots are on Capitol Hill.

I have concluded that this was an appropriate selection of speakers. For as important as conservation, research and technology are in their own right as fitting subjects for this Outlook Conference, they are also the subjects of active policymaking and carry much political weight in the Federal Government today.

Conservation, research and technology are supported by major programs in this Department. SCS has 13,000 employees and the Science and Education agencies, 9,000. These programs are closely followed by Congressional subcommittees such as the one headed by Congressman Brown and by other influential members of the House and Senate. Their appropriations approach \$2 billion annually, a major share of this Department's discretionary budget.

There is a vast research establishment both inside the Department of Agriculture and at the grass roots in the various land grant universities. There is a conservation establishment that spreads across 27 different programs in eight separate agencies within the Department and out into the country. In nearly all the rural counties there are soil and water conservation districts, and they number close to three thousand. Serving on the boards of these districts are about seventeen thousand public spirited volunteers. Then, as a parallel structure in each county there are the county committees that serve under the ASCS and award cost-sharing payments for conservation measures.

Both the research and the conservation fields are people-intensive. They are densely populated with organizations at the county, State, and national levels that all make their presence felt on Capitol Hill. They are highly charged political minefields that must be negotiated carefully. No doubt this is why politicians, whatever their technical background may be, feel so much at home in the politics of agricultural research and the politics of conservation.

Both agricultural research and soil conservation stand as politically durable Federal programs which have held their own over the years in gaining support from Congress. We expect this support certainly to continue. Nevertheless, voices have been raised against both the research and the conservation programs in recent years, charging that there were no longer relevant to the real needs of the agricultural community and the entire nation. There is increased fiscal competition for scarce Federal funds. So in this Administration, we are making serious efforts to reevaluate these programs. They are too important to the mission of USDA to ignore. Research, technology and conservation, whether done by the private sector alone or with Federal support, are the underpinnings for maintaining the productive capacity of U.S. agriculture. The USDA programs in these areas have much to be proud of so far, and if they are kept up to date with the needs of these times, they can continue to serve a crucial role and do it with dedication and excellence.

As politicians we in policy roles are practical enough to know what long-standing support these programs have throughout the country and that their constituencies do not want them to change radically or very much at all. At the same time, it is our duty, as we know it is Congressman Brown's

in his role as a Subcommittee Chairman, to take a fresh look at our research and conservation programs and then call the shots the way we see them. While our policy conclusions and those Congressman Brown reaches do not always agree, we know that he, like us, is committed to careful analysis of our on-going programs, and that he does not shrink from proposing unpopular measures if he sincerely feels they are in the best interest of the nation.

So in my remarks this morning, I would like to talk about both the problems we face in soil and water resources and the policies we in this Administration have for carrying out our responsibility for soil and water conservation programs. We have no ultimate answer to the question, "Will we sustain our agricultural productive capacity?". The individual producers themselves, in the sum total of the decision they make, will decide this. A profound influence will come from the research sector, as we see future improvements in technology, for example, the breakthroughs in plant genetics and new equipment. But the soil and water conservation programs in this Department have been and will be critical, as USDA tracks these developments, sponsors some of them, and serves the agricultural community with information, its traditional role.

Soil Conservation: Many Agencies Have Roles

The soil and water conservation mission in USDA is carried out by technical assistance, financial assistance in the form of cost-sharing grants and loans for conservation measures, by education and by research. These 27 separate programs, as I have said, involve eight separate agencies within the Department of Agriculture. They are the SCS and ASCS as main players, but also the Farmers Home Administration, the Forest Service, ERS, ARS, Extension and the Cooperative State Research Service. These programs draw

their authority from 16 different pieces of legislation.

The presence of so many agencies and programs in the conservation business in USDA means that anyone in a policy position trying to stake out the key issues in soil and water conservation and then designing programs to address these issues does not start with a clean slate, nor can he operate with a free hand. The various agencies within the Department believe in the worth of their respective different programs and so do the members of Congress who have been the authors and supporters of these programs over the years. It is easy for newcomers to become enmeshed in this structure and lose sight of the overall aim of these conservation programs. Policy makers in the conservation arena spend a disproportionate amount of their time on the internal relationships among the various agencies and programs that are carrying out the conservation functions inherited from previous Administrations and Congresses. This saps valuable time and energy and leaves less opportunity to study the big issues and propose far-reaching changes that may be needed to address them.

RCA: An Opportunity To Study Data,
and See Where Problems Existed

This is why, upon coming into this Administration, Assistant Secretary Crowell and I were extremely fortunate to have before us as an unfinished task the completion of the National Program for Soil and Water Conservation mandated by the Soil and Water Resources Conservation Act of 1977 (RCA). The Administration before us had completed the 1980 appraisal required by the Act and had begun but not completed the national program. Secretary Block

set us to work to complete the program by the end of 1981, and in October 1981, a preferred program of the Department was ready for Secretary Block to issue to the public for public comment. We expect the final program to be sent shortly to Congress by the President.

We were lucky to be given this assignment in the first year of our work at USDA because we were able to step back and take a long look at the nature of the soil and water resource problems facing the nation and we were under deadline pressure to draft a program, a Department-wide program, to meet those problems.

The Row-Crop Explosion

The RCA appraisals and the preferred program were all issued and widely circulated during 1981. I will briefly summarize what they revealed about soil erosion. The appraisal data disclosed that while soil erosion was not a serious problem on two-thirds of America's cropland, on the remaining one-third soil erosion exceeded tolerable levels of five tons of soil lost per acre per year, and certain areas were threatened with severe loss in agricultural productivity because of excessive erosion.

This data, drawn from the 1977 Natural Resources Inventory, went hand-in-hand with the phenomenal changes that those familiar with agriculture knew were taking place in the 1970s. The explosion in production of corn and soybeans, the Cinderella crop of the 1970s, meant that farmers sought more and more land for row-crop cultivation. Row-crops found their way onto land that was previously used on the typical farm for pasture. This pasture land was

newly available for row-crops as cattle raising went off the regular farm to be a specialized activity at feedlots. A typical farm in the 1970s no longer found it rational or profitable to be diversified by growing a variety of crops, maintaining some land in pasture or rotating fields between crops and pasture. Farms went in for "monoculture" of corn, soybeans, and cotton in larger and larger units. Continuous year-in-year-out cropping became the rule, as pesticides and new, larger equipment became available to make this kind of farming both possible and highly efficient. All of this put additional strain on the best soil and brought into crop production for the first time sloping fields, better suited by far for pasture, that were prime candidates for erosion. This empirical view of how farming was changing was borne out in the statistics that came from the 1977 NRI.

The NRI, however, arrived at this significant fact as well. On ten percent of the cropland, erosion was over ten tons per acre. These acres accounted for 54 percent of all sheet and rill erosion and 89 percent of all excess soil losses in the nation. Let's look at some of these areas:

--The Palouse area of southeastern Washington, and neighboring portions of Idaho and Oregon. The erosion rate there is 20-30 tons per acre on many areas. On the steeper slopes, 100 to 200 tons per acre. Yet this is one of the most productive wheat growing areas in the world. Farming will continue to be important there for that area and for the entire nation.

- Southwestern Iowa and north-central Missouri, two of the most erosion-prone sections of the Corn Belt. In these areas two-thirds of the acreage needs attention for erosion control. Annual soil losses are as high as 25 tons per acre.
- The Mississippi Valley Uplands of the Southeast, including southwest Kentucky, west Tennessee and northern Mississippi. These severely erosive soils here are washing away on untreated lands at from 23 to 90 tons per acre.
- The Coastal Plains of the Southeast, including southern Alabama and east central Georgia. Only 29 percent of this cropland is adequately treated.
- The Piedmont area in north central North Carolina and south central Virginia. The average annual erosion rate is 18 tons, a critical rate of soil loss in this area because the soils tend to be shallower than in some of the other erosion-prone areas.
- The northern Mississippi Valley where Wisconsin, Minnesota and Iowa meet. Here the erosion is from 10 to 20 tons annually per acre on sloping land.

What these areas have in common is that they are highly productive farm areas and all have rates of soil erosion that threaten their sustained productivity. Now at last, thanks to the NRI, we know where our soil erosion crisis lies -- it is here, in these pinpointed areas.

The HRI has located other critical areas in the arid West, where irrigation keeps agriculture going, and where farming is especially productive. For these areas, the crisis is not soil erosion but soil salinity and water shortages:

- An especially critical soil salinity area is the Colorado River Basin and the headwaters of the Arkansas River in Colorado. As irrigation continues, the soils become more and more saturated with salts as do the waters that flow off these soils.
- Water is in short supply in all 18 western States that rely on irrigation, but in Idaho, Montana, Oregon, Utah and Wyoming on-farm irrigation efficiency is the lowest, below 40 percent.
- The Ogallala Aquifer supplies ground water to irrigated farms across the High Plains -- Kansas, Nebraska, New Mexico, Texas and Oklahoma. These supplies of water are shrinking from overdrafts, yet irrigation efficiency is only 40 to 69 percent.

In water conservation, then, as well as soil conservation, problems are severe in localized settings, and these are some of the most fertile, productive agricultural areas in the country, the agricultural muscle of this Nation.

Weaknesses In USDA Programs To Deal With Concentrations of Erosion

What, then, were the tools that the Department of Agriculture was bringing to bear on the new surge of soil erosion in prime farming areas caused by intensive cropping? And was the Department equipped to help handle

the pinpointed water crises in irrigated farm areas? Frankly, we found these tools not working as well as they should.

The Soil Conservation Service was firmly established in some three thousand soil and water conservation districts as the provider of technical assistance to farmers and ranchers who undertake conservation measures on their land on a voluntary basis. Technical assistance is a \$230 million a year program. The SCS must be in the vanguard of addressing the new serious conservation problem on the most affected agricultural lands. However, the very popularity of the SCS technical assistance program in three thousand counties coast-to-coast operates as a political and administrative restraint on the agency's emphasizing assistance in certain areas while deemphasizing it in others.

After the conservation technical assistance program, the largest program within SCS is the small watershed planning and construction program, which has been operating at an annual funding level of about \$190 million, which some doubt makes a commensurate contribution to overall conservation needs. Finally, the third major conservation program in USDA is the Agricultural Conservation Program of the ASCS, also funded at \$190 million. A recent evaluation of ACP, published in 1981, showed that, of the practices studied, more than 52 percent of ACP's erosion control practices were being installed on lands eroding at annual rates of less than five tons per acre, and soil losses prevented averaged 4 tons per acre.

This evaluation, I should say, has galvanized ACP into action in improving its conservation performances. Gordon Nebeker has been active in

this move. The latest evidence we have is that these ACP erosion control practices are now resulting in an average soil saving of 7 tons an acre instead of 4. I bring this old figure up not to reopen any old wounds but simply to cite one example of how the USDA's overall approach in conservation has not stressed accountability to solve the worst problems first.

More Funds Or Better Use Of Existing Funds

As policy makers charged with the responsibility for directing the expenditure of public funds on conservation programs in order to help sustain the agricultural productive capacity of the United States, we are in a political and fiscal dilemma.

The RCA Program we have designed would re-direct existing conservation program efforts for the fiscal years 1983 through 1987. It would assign an increased share of the funds spent by the Department of Agriculture for three top priorities: control of soil erosion on the most productive agricultural lands, water conservation in the arid West, and upstream flood damage reduction in the East. It would target funds for technical and financial assistance on a gradual phased-in basis until, by 1987, 25 percent of all technical assistance and financial assistance would be used in targeted areas from a standpoint of erosion and other top priority conservation problems. Finally, the RCA Program advocates grants to conservation districts, as authorized in the 1981 Farm Bill, as a way of building more local capability and interest in conservation at the local level, so that localities and States can become more active in performing and funding conservation programs.

However, with all these far-reaching reforms in the way existing funds would be spent, the RCA Program does not advocate a significant increase in Federal conservation funds beyond the nearly \$1 billion that is currently spent on the total conservation effort. For this, we in the Administration and our RCA proposal have been attacked on Capitol Hill and throughout the conservation community. Many critics believe that the answer is simply more money, and if special needs are to be recognized in certain areas of the country, these areas should be supplied with "new" money. In other words, there should be, our critics say, no plans that would decrease the funding currently available to all parts of the country under the existing untargeted and unprioritized programs.

The Administration has taken stock of the resource situation in this country as presented in the 1980 appraisal done under RCA. This Administration believes that in certain highly productive agricultural areas of the United States, excessive soil erosion is a problem that if not addressed in a concerted way will impair our national agricultural productive capacity. While we believe that soil erosion, water scarcity for agriculture, and upstream flood damages do occur to some degree in all parts of the United States and should receive some level of attention as part of a national conservation program, it is time to place the Federal Government's emphasis on those particular areas of the country where these problems are the most severe to the point that they pose a serious threat to continued high production of agricultural products.

On the matter of erosion, the number one priority, we believe that Dr. Theodore W. Schultz, Nobel Prize winning agricultural economist from the University of Chicago, gave sound advice in his talk last March 17 to the Agricultural Council of America here in Washington.

At that time, Dr. Schultz said:

"By now it should be evident that soil erosion does not occur in all parts of agriculture. It is not a national phenomenon.

"Clearly soil erosion is location specific. Its technical and economic attributes vary widely both within and between locations. For the purpose at hand the unit of land on which it occurs is a farm and the decision entity is the farmer. This being the case, a nationally administered soil conservation that is politically designed to provide funds and services to all part of agriculture, is bound to be a model of inefficiency."

This Administration feels that the conservation programs of the USDA, as popular as they are in the communities they serve and as durable as their support has been in Congress, have been too often "models of inefficiency" in Dr. Schultz's words. We want these programs to continue, but they must become more efficient and thus more responsive to the precise localized nature of the soil erosion threat to American agriculture. The same type of targeting should be applied, as well, to the other major resource priorities identified in the RCA: water conservation in the arid West and upstream flood damages in the East. After the final version of the national program for soil and water conservation is sent by the President to Congress shortly,

the Department will set to work implementing the RCA Program. At its heart is going to be the greater attention to the three priorities, especially through geographic targeting.

Can Agricultural Productivity Be Sustained?

When I was invited to speak, the Committee told me they did not want a gloom-and-doom presentation. We still have to answer the question, "Can our agricultural productivity be sustained," given the problems of erosion and water shortages I have mentioned. My answer is that it certainly can. Soil and water supplies are in danger in specific local areas. We know, thanks to our excellent NRI data base, where those areas are and how severe the problems are. So we can and will address them. We also believe the improvements in farm technology -- new seeds, fertilizers, equipment, information resources -- will continue to increase the productivity of agriculture. Finally, farmers remain one of our last stubborn breeds of small-business entrepreneurs. They are people who have shown time and time again that their will to survive is matched only by their skill at applying new technology to their farms. But as Secretary Block has said so often, unless farming is profitable for the individual farm operator, conservation will not be high on the farmer's list of priorities and who can blame the farmer?

With all that we have going for us, I am sure that American agriculture will prevail over the ravages of soil erosion, water shortages and other hazards of productive farming that have arisen on the landscape. It will not be always simple to overcome these threats to the natural resources on which agriculture depends. But in this Administration we intend to put at the service of American farmers and ranchers the most rational, efficient, effective programs that we can devise.

December 1, 1982

I very much appreciate the invitation to appear today at the 1982 Agricultural Outlook Conference, especially to discuss a topic as important as the long-range view for conservation research. However, I am sure that many in attendance today, and certainly the majority of the farmers in the country, have more immediate concerns on their minds. The farm economy is in desperate shape and there are few hopeful signs for the future.

Yet it is even more important than ever not to lose sight of the broader, longer-term issues such as soil and water conservation. We too often neglect these issues in responding to present crises, creating more severe problems in the long run.

Today, the concern of the entire agricultural community has reached a level where concerted action on a wide front appears to be a realistic possibility. Increasing attention to soil and water problems at a time when budgetary pressures are forcing changes in our conservation programs has caused this movement. The time to act has arrived - unfortunately along with \$180 billion deficits, a stubborn recession, and a weakened farm economy.

Given fiscal constraints, we must put into use as many cost-effective conservation practices as we can afford. And we need to target the flow of public funds in a way which guides these cost-effective practices onto the most fragile lands and into the areas with the most critical water conservation needs.

It is difficult to target conservation expenditures to regions most in need and to employ conservation practices and systems which deliver the best return. Our past inadequacies in conducting long-range conservation planning are shown by the apparent speed with which conservation issues have jumped onto our current agenda. We are faced with a major problem but do not have adequate data upon which to base policy decisions.

We need to know what soils and aquifers are most critically in need of priority attention so that they can receive more funds. And we must have a solid basis of fact to determine which conservation practices and systems warrant public investments. We also need to administer conservation programs more effectively so that the tons of soil and acre-feet of water conserved per dollar spent starts going up instead of steadily declining.

A start on developing this factual base is contained in the 1982 Natural Resource Inventory. However, this inventory is not currently available for researchers who need the data to determine the state of our current resource base and the rate at which it is declining. The Department of Agriculture should make the effort to make this information available as well as the vast amounts of other information contained in USDA data bases.

Obviously we have some very important long-term research needs. Unfortunately, we have not developed an overall plan for agricultural research. I have encouraged the development of such a plan in the latest Farm Bill, which calls for a research needs assessment. Others have addressed this issue as well and deserve our attention.

An excellent start at a discussion of conservation research needs was made at a recent conference, "Soil and Water Research Priorities for the Nation," held in February, 1981, in Madison, Wisconsin. The conference made a number of invaluable recommendations, some of which I would like to share with you.

1) We need to concentrate on sustaining soil productivity through research which refines conservation technologies to deal with diverse conditions. We need to develop practical conservation systems which accomodate the pressures of time and economics which all farmers deal with during a planting season.

2) We need to develop conservation systems which deal with managing water in a stressed environment. As water supplies approach a critical point, competing demands for that water must be dealt with, and these decisions require better data and conservation systems.

3) We need systems which better protect water supplies from contamination from point sources and non-point sources of pollution.

4) We need to develop systems for more effective targetting and delivery of technical and financial conservation assistance.

5) We need to improve assessments of soil and water resources so that we get a clearer picture of what contemporary farm practices are doing to the resource base.

Another excellent report recently issued discusses several of these points as well. The report, "Impacts of Technology on U.S. Cropland and Rangeland Productivity," was prepared by the Congressional Office of Technology Assessment. It presents an excellent overview of the issue, and for individuals interested in trying to formulate long-term conservation research plans, it should be required reading. I would also alert you to an upcoming OTA report on water conservation issues which should also be a top quality document.

Conservation problems are emerging which are beyond our current policies, knowledge base, and even institutions. But with a renewed effort, we can make the corrections needed to address these problems. This will require some changes in the way that we go about our conservation planning.

As I indicated earlier, we need to step up our environmental monitoring efforts. We do not know enough about our current resource base, let alone the rate at which it is being depleted. An effective monitoring system gives us the lead time required when dealing with natural systems, where we need a much longer lead time to implement program changes. More effective monitoring would also provide researchers with the time to deal with a problem once it is detected.

Next, we need to begin to look at agriculture as a system and get away from developing individual technologies to deal with individual problems. Frequently there exist common solutions to seemingly separate problems, but these solutions only become apparent when we look at the larger system. We also need to develop better communication between researchers in different disciplines.

As we examine innovative approaches to solving our conservation problems, we must include emerging technologies in our strategy. Remote sensing can play a large role in future conservation systems by allowing us to monitor our natural resource base on a real-time basis. The House Agriculture Subcommittee which I chair has been exploring the potential of computer and information sciences over the last two years. One major use of these technologies is the maintenance of natural resource data bases required by program planning. Another opportunity exists in the use of these technologies to increase farm efficiency.

But above all, those of us in the policy arena need to rise above the current crises and political pressures which prevent us from doing an adequate job in planning conservation research. We should be willing to spend a little more money today, properly focused, in order to avoid even larger payouts in the future. We should be open in our discussions of policies and not get enmeshed in protecting this agency or that program at the expense of the larger goal.

I am not so naive as to believe that we can do this overnight. But I firmly believe that we need to begin the effort now. We have both the opportunity and the need to do a better job with conservation research.

I want to thank you again for the opportunity to speak today and look forward to further discussions on this topic during the next session of Congress.

David E. Kenyon, Professor of Ag. Economics, Virginia Tech
David H. Harrington, Economic Research Service, USDA

1983 Agricultural Outlook Conference, Session #27

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Marketing risks must be considered within the context of total farm risks. Farm risks are usually divided into three categories: production, marketing, and financial. Total farm risks, measured in terms of variability of returns, increased substantially during the 1970's. Net farm income, one measure of increased variability of prices and costs, has fluctuated widely since the early 70's, after remaining relatively stable over the 50's and 60's (Figure 1). The main source of the increase in risk compared to the 1960's was increased market and financial risks, not changes in production risks.

The current farm economic environment suggests why understanding the interrelationships between production, marketing, and financial risks is so critical. During much of the 1970's, farmers depended on increasing land values to expand their borrowing capacity. As long as inflation continued and land values increased, farmers could count on increased borrowing against the value of assets as a liquidity reserve in the event that production or marketing risks generated a negative cash flow. In essence, the potential for increased borrowing became their main risk management tool. As land values increased, their reserve borrowing capacity grew, and farmers were willing to select riskier investments and financial plans. Many farmers followed aggressive expansion plans and reaped large financial rewards. However, the recent drop in the inflation rate, higher interest rates, and lower farm prices have resulted in a decline in farmland values. The reserve borrowing capacity has been greatly reduced or eliminated and cannot be depended upon to compensate for production and marketing risks.

The impact of the change in inflation, interest rates, and farmland values on the financial position of a typical Mississippi Delta cotton-soybean farm has recently been demonstrated by Harrington, Schertz, Baum, and Jeremias (Table 1). They simulated income and operating expenses, current cash flow, and capital gains to demonstrate that rates of return on debt financing increased the rate of return to equity in 1979, was neutral in 1980, and decreased return to equity in 1981. Negative cash flows in 1980 were more than offset by capital gains, the usual situation through most of the 1970's. However, negative cash flows in 1981 were not offset by capital gains, and negative returns to equity resulted. This is the position many farmers find themselves in today. Their cash flow has been negative for the last two years and their borrowing capacity has been reduced by declining land values. They are in an extremely risky position entering 1983.

Instability of Net Farm Income Over Three Decades*

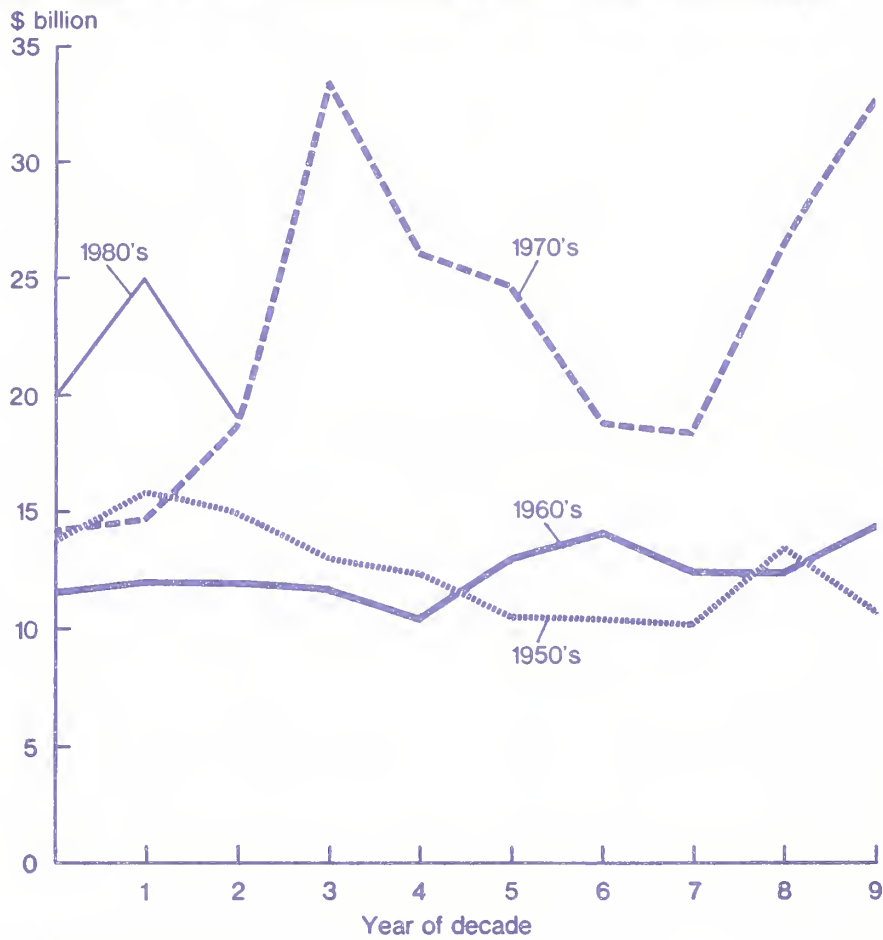


Table 1--Rates of return, cash flows, and risk exposure of a Mississippi cotton-soybean farm with two levels of debt^{1/}

Item	1979		1980		1981	
	Yields and prices Full equity	50% equity	Yields and prices Full equity	50% equity	Yields and prices Full equity	50% equity
Cash Income	\$310,000	\$310,000	\$250,000	\$250,000	\$260,000	\$260,000
Cash operating expenses	165,000	165,000	170,000	170,000	215,000	215,000
Interest and principal payments	0	75,000	0	103,000	0	102,000
Net cash flow	\$145,000	\$70,000	\$80,000	-\$23,000	\$45,000	-\$57,000
Depreciation allowance (not paid in cash)	18,000	18,000	20,000	20,000	23,000	23,000
Allocation for operator and family labor, management and risk	29,000	2/26,000	30,000	2/27,000	35,000	2/31,000
Return to owner's equity from current income	\$98,000	\$26,000	\$30,000	-\$70,000	-\$13,000	-\$111,000
Capital gains (not received in cash)	170,000	170,000	155,000	155,000	-40,000	-40,000
Total return to owner's equity	\$269,000	\$196,000	\$188,000	\$85,000	-\$53,000	-\$151,000
Owner's equity	1,575,000	788,000	1,730,000	855,000	1,690,000	845,000
Rate of return to equity (percent)	17.1	24.9	10.9	9.9	-3.1	-17.9

^{1/} Based on a farm model that incorporates production, economic, and accounting relations for a hypothetical, but representative farm. 2/ Adjusted for net investment (principal payments) paid in cash.

It is within this context of cash flow squeezes and greater price fluctuation within and between years that management of markets and financial risks has become critical to the success of farmers. In keeping with the topic of this session we will concentrate our remarks on managing price risks. Although several methods of managing price risk are available like cash contracting, government programs, spreading out cash sales, storage, etc., we are going to concentrate on hedging strategies. Our purpose is to: 1) review what research has established about various hedging strategies, 2) discuss some of the limitations of this research, and 3) discuss these strategies in the context of the market and financial settings expected for 1983.

Hedging Strategy Research

A typical study of hedging strategies simulates the production or storage of crops and/or livestock using historical prices, yields, and costs. Once a strategy is chosen, futures contracts are sold (bought) at the appropriate time to establish the selling (buying) price of the output (input). By following each strategy for a number of years, the average return per year and variance of return over the years can be computed. Variance of returns is used to measure risk. The mean and variance of each strategy are compared to each other and to the results from using only the cash market. Those strategies with higher average returns and smaller variances would be judged superior to a cash only strategy. Strategies with lower means and higher variances would be considered inferior. The desirability of strategies with lower (higher) means and lower (higher) variances compared to cash depend upon each individual farmer's attitude toward risk.

Hedging strategies can be broken down into three general categories depending upon the criterion used in determining when to hedge. The three groups are routine, selective, and multiple selective hedging. Routine hedging strategies assume the product is priced each year at the same time regardless of the price level. Examples would be pricing expected crop production at planting or pricing cattle when they are placed on feedlot. Strategies of this type usually reduce price variation but also decrease average price received. For example, McCoy and Price found that routine hedging of fed cattle during 1965-1974 reduced the variance of profits per head by 71 percent but reduced average profits per head from \$9.55 to \$0.18 compared to cash only strategy. Erickson found similar results for cattle feeding over the period 1968-75. During 1971-1978, Kenyon and Cooper found that routinely hedging corn at planting reduced price variance by 13 percent and average price by 10 percent compared to cash market sales at harvest. Eddleman and Moya-Rodriguez report that routinely hedging soybeans in Mississippi during 1973-77 reduced returns per acre by 14 percent and the variance of returns by 32 percent. Only very risk averse farmers would find these routine strategies appealing. Experience with presenting these results to farmers confirms that most farmers are not interested in routine strategies. This observation is consistent with the empirical findings on individual risk preferences of farmers. Young reports that among studies of Australian and American farmers, approximately 50 percent manifested risk

preferring attitudes over at least some ranges when measurement technique did not preclude this possibility. Hence, economists have searched for hedging strategies that increase average returns without substantially increasing risks. This search has led to what is called selective hedging strategies.

Selective hedging strategies base the decision on when to hedge on the relationship between futures prices and cash prices, costs, predicted cash prices, historical margins, or some other economic criterion. With a selective strategy, the decision-maker hedges only when the criterion is satisfied regardless of the stage in the physical process. If the criterion is never met, a hedge is not placed. If the criterion is met and a hedge is placed, it is maintained until the end of the production process. Selective strategies produce a wide range of results since the number of different strategies is almost endless. The significance of these selective strategies is that some of them increase returns and reduce variances simultaneously, while many of them increase returns and variances simultaneously. After surveying the literature on hedging strategies for livestock, Leuthold and Tomek reach two conclusions about selective hedging strategies. First, selective strategies are usually superior to a no-hedge strategy, and second, the strategies which have been the most attractive are those based on economic "common sense", such as selling futures only when a profitable feeding margin can be established (futures prices exceed break-even prices).

Most selective hedging strategies begin their search for profitable selling prices at the beginning of the production process assuming costs are fixed. However, several recent studies by Kenyon and Shapiro; Johnston, Shafer, and Griffin; Leuthold and Mokler; Spahr and Sawaya, indicate that the simultaneous hedging of major inputs and output prior to feeding improves the overall performance compared to strategies that only hedge the output. If the desired profit margin is not reached prior to feeding, the feeding process is initiated and a selling hedge placed when the profit margin criterion is met. Under this strategy, a profitable margin is usually obtained sometime before or during the feeding process. In the Leuthold and Mokler study, the three way hedge of feeder cattle, corn, and live cattle prior to feeding generated higher mean returns and smaller variances than only selling live cattle after feeding began. In all three studies, a relatively small percentage of the hedges placed involved both inputs and outputs (25 percent or less) but these 3 way hedges frequently occurred when subsequent cash only strategies produced large losses.

Multiple selective hedging strategies, according to Ikerd, establish hedges when market risks are increasing (prices falling) and removing hedges when market risks are declining (prices increasing). Hence, hedges may be placed and removed several times during one production cycle. In routine and selective hedging strategies, a hedge once placed is not removed until the end of the production process. Like routine and selective hedging strategies, the crucial question is when and when not to hedge. In multiple selective

strategies, this question is answered by the use of technical tools like moving averages, point and figure charts, and formations on bar charts. Studies by Franzmann, Brown and Purcell; Johnson, Shafer and Griffin, Kenyon and Cooper indicate that strategies based on technical indicators consistently have higher average returns and lower variances than the cash only strategy. The technical strategies frequently have greater returns than selective strategies but may also have larger variances.

In summary, average returns generally increase as the strategy moves from routine, to selective, to multiple selective hedging. The variance of returns varies greatly by strategy. Routine strategies typically reduce price variances across years compared to not hedging. The selective strategies may give smaller or larger variances than routine strategies, but consistently produce variances less than a cash market only strategy. Multiple selective hedging frequently produces larger variances than selective hedging.

Limitations

In terms of managing marketing risk, these studies have a number of deficiencies which are critical to their application and which should be addressed in future research. Three of these areas are 1) the simultaneous considerations of yield and price risk, 2) the use of technical tools in hedging strategies, and 3) the simultaneous consideration of production, market, and financial risk. While much has been learned, these gaps in knowledge limit the certainty with which strategies can be proposed, or used by farmers.

Production yield risks and price risks have not been simultaneously considered in most studies. Crop yields or growth rates of live-stock are usually assumed constant. This assumption masks a large portion of the risks faced by producers. Those studies which do incorporate yield risk (McKinnon, Heifner) either hedge routinely or have as their objective the minimization of risks. These strategies generally do not appeal to farmers. Current research does not indicate what percentage of expected production should be hedged under various selective hedging strategies. This is a serious weakness because one of the most frequently asked questions by farmers is "How much should I hedge?" A recent study by McCanless on selective hedging strategies for Virginia corn producers indicates that no simple rules of thumb across various selective hedging strategies can be uniformly applied to answer this question. Much research is needed in this area to give practical guidelines for answering this important question.

The long term feasibility of using technical tools to place and lift hedges raises many questions among agricultural economists. The normal assumption is that futures markets can be characterized as a random walk or at least a "fair game" in which technical strategies would not in the long-run produce gains greater than those obtained from a riskless investment like T-bills. However, what scattered and mostly dated research that is available on the nature of futures market price behavior indicates that some futures contracts cannot be accurately characterized as random walks (Bear and Stevenson; Mann and Heifner; Cargill and Rausser; Purcell,

Flood and Plaxico). Hence, it may be possible to design technical strategies that consistently earn profits--at least over short periods.

A substantial effort by university extension personnel and farm organizations is being made to teach farmers basic technical tools. The recent widespread availability of relatively inexpensive and sophisticated minicomputers makes it practical for farmers to use a wide variety of technical tools. Many economists believe these tools are not going to be useful in the long run. Many traders think they have proven useful and are likely to continue to be useful. In any case, careful, rigorous, detailed research needs to be conducted to test the long-run usefulness of technical tools.

With respect to this problem, we would like to suggest two areas of research. First, an extensive study of the behavior of futures prices since 1972. This study should address two interrelated questions: 1) are futures price changes random walks, and 2) can technical systems be devised that consistently make profits when applied to prices outside the data base used to generate the system. The second study would be an ex post analysis of technical strategies published in the last five years. Most of the studies cited did not apply their technical tools on prices outside the data base or only analyzed a short time period outside the development data base. Sufficient time has now passed to give these strategies a more rigorous test.

The third general deficiency in knowledge of hedging strategies is that studies generally have not simultaneously considered production, marketing, and financial risks. A number of studies combine two of these areas, but none combine yield risk, selective hedging strategies, and alternative financial arrangements. The most comprehensive study to date explicitly analyzing all three areas of risk is that of Lutgen and Helmers. They simulated the interaction among financial arrangements, and alternative production and marketing strategies for an eastern Nebraska grain farm over the years 1961 through 1975. They conclude that there is a definite marketing-production interaction and that the performance with respect to firm growth, and the risk associated with a hedging strategy cannot be evaluated apart from production alternatives. Lutgen and Helmers only analyzed routine hedging strategies. They also assumed that prices and yields were uncorrelated. Their basic model needs to be expanded to include selective strategies and their impact on cash flows and growth of the firm under alternative equity situations. Purcell and Riffe found that selective hedging strategies based on technical trading systems dampened the amplitude of fluctuations in cash flow of a simulated cattle feeding operation during 1973-77. Barry and Willman found that bankers in Texas increased loan limits when producers forward contracted $1/3$ to $2/3$'s of production. Their results indicate that when credit conditions are favorable, optimal growth plans will include contracting even by farmers with little or no aversion to risk, although the profit possibilities based on expected cash market prices may appear more favorable. More recently, Harris and Baker found that bankers in east central Illinois would not increase borrowing capacity by more than margin requirements

when producers hedge. This finding is contrary to the generally accepted idea that bankers will lend more to producers who reduce price variability through hedging.

Although these studies demonstrate that production, marketing, and financial risks are interrelated, they too have some deficiencies. The possibility of many different financial arrangements, including equity and cash flow considerations along with various selective hedging strategies, have not been evaluated to determine the nature of these relationships. The development of an adequate research base in this area is hindering the development of extension programs with farmers and lenders that effectively demonstrate how to simultaneously manage risks in all three areas to meet farm goals.

Strategies for 1983

Many crop farmers and some livestock farmers who have recently expanded, or have greater than average levels of debt have suffered two consecutive years of negative cash flows and have seen their borrowing capacity reduced by declining asset values. These producers may find the probability of financial failure in 1983 to be unacceptably large. These producers have several options. First, they could hope that 1983 would result in both high yields and high prices, and hence relieve their financial difficulty, but this is banking on an unlikely event. The review of hedging strategies indicated that this approach is generally the most risky. Or, they could manage their price risk by evaluating alternative marketing strategies and the risk associated with them. Currently, futures prices for 1983 crops are at levels that most producers in financial difficulty will find inadequate to meet their 1983 cash flow needs. Current crop futures prices will not satisfy the criteria set up in most selective hedging strategies. Hence, at this point in time, producers following selective hedging strategies would not hedge. Although most selective hedging strategies have historically been less risky, in 1983 they may not reduce risks to to an acceptable level. In addition, farmers could participate in commodity programs. The current government program of loan rates, target prices, reserve prices, and storage payments along with acreage reduction and paid land diversion offers crop producers the highest price with virtually no price risk. Finally, if producers cannot generate positive cash flows under government established prices, then perhaps they should consider selling enough assets and retiring enough debt to increase their probability of financial survival in 1983 to an acceptable level.

The current financial situation faced by many farmers is highly unfortunate. Many of these farmers find themselves in this position because they did not fully understand the relationship between production, marketing, and financial risks. Most of the hedging strategies discussed in this paper, if employed, would have generated higher crop prices in 1981 and 1982 and could have significantly reduced the current financial difficulties for those employing them. In the longer run, if more of the production, marketing, and

financial risks are to be borne by the private sector, then government, business, and university economists must continue to conduct research to more fully understand the relationships between production, marketing, and financial risks; and this research must result in programs for farmers and lenders to make them better able to understand and manage total farm risks.

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"FARMERS HAVE MASTERED THE PRODUCTION PROCESS -- THEIR NEXT ROUND OF GAINS WILL BE IN MARKETING." This statement appeared on the cover page of Farm Futures Magazine, October 1978. My Purdue colleagues in Agronomy took exception to this statement, as they believe there are still many opportunities to increase production skills. Besides the professional differences in viewpoints, the gains to be achieved may be relative in nature. When I was a senior at Iowa State University, one of the most productive counties in Iowa had a County Corn Production Club. Their goal was to achieve a county average of 100 bushels of corn per acre. The state average yield for Iowa was @53 bushels at that time. Now Iowa average corn yields run over 125 bushels in years of favorable weather conditions, and the top producers can achieve yields of 180-200 bushels per acre.

A similar example might be the average speeds obtained by the race cars at the Indianapolis 500 racetrack. Once they have obtained 200 m.p.h., it is much tougher to obtain the next 5 m.p.h. than it was when the top speed was 130-150 m.p.h..

Yields still vary considerably by locality and are important but much of variance is whether controllable marketing variation can be managed.

It's always good to begin by defining terms. To me, marketing means the determination of price, the delivery of the product to market, and the transfer of title.

What are the magnitude of the gains to be achieved? Of course, that depends upon where the producer is currently in the development of his marketing skills. At a recent Producer Grain Marketing Conference, Darrel Good, University of Illinois economist gave the following example: "During the last 5 years, the difference between the average monthly low price and the average monthly high price was over \$100 per acre, using state average corn yields. On a typical 500 acre corn farm, that amounts to \$50,000 extra profit per year, or \$500,000 in 10 years."

Several people have used the example that, 2/3 of the producer's marketing is done in the bottom 1/3 of the annual price range. I concur, but that sounds terrible. The implication is that a simple strategy of selling 1/12 of production each month would generate an average price and beat 2/3 of the farmers. Before becoming too critical, one must realize that 1) Prices are much more volatile than they were in the decade of the 50's and 60's and 2) The export markets have grown to the point where we are dealing with International supply-demand conditions, especially for grains and oilseeds, and 3) With many of our Agricultural enterprises, there is a year's time lag in the production cycle -- i.e., only one crop produced annually, cattle are on feed for up to

12 months, a year's time passes from the time gilts are bred until the pigs are born, raised, and marketed. Expansion in the cow-calf enterprise takes an even longer time period.

There are several characteristics that are common to marketing agricultural products:

1) There are actively traded futures markets for our major crops and livestock enterprises. This means the producer can separate the pricing and delivery time and/or decision. It also means that they can extend the time of the marketing decision to approximately 2 years for grain and up to a year for livestock.

2) Prices of agricultural products are difficult to predict with a high degree of accuracy. There are a number of factors that continuously change. Sometimes prices change because of factors that were accurately forecast and widely advertised. Yet the producer must make a speculative decision in accepting a price.

3) Delivery is determined for livestock by the weight and grade. With livestock, the producer has only a limited weight range when he can profitably market hogs or cattle. The time period is usually about 30-45 days. Premiums and/or discounts are offered for hogs and/or cattle of a certain weight and grade, depending upon the market needs. There are premiums and discounts offered for grain, depending whether the grain trade needs grain or is receiving more than they need at a given time. The producer can marginally modify the optimum marketing decision by cash flow needs, income tax considerations, and storage.

4) There are 2 parts to any stated price:

- a. The price level as reflected by the futures markets. This is determined by world supply and demand conditions (in grains) and
- b. Basis, the difference between the local price and a specified futures contract (option). The basis reflects local conditions, carrying charges and delivery charges. The decisions on price level and basis can be made separately.

With livestock, producers can:

- a. Forward Contract for future delivery for a specified quantity for delivery at a specified time, at a definite price.
- b. Hedge by selling (or buying) a futures contract -- taking an opposite position in the futures market from the cash situation.

With the grain, the choices are more numerous. The producer can:

- a. Forward Price before harvest by:
 1. Hedging -- in which case he fixes the price level and continues to speculate on the basis he will receive at delivery.
 2. Contract with an elevator -- where a specific price and quantity is set.

3. Basis contract

There are advantages and disadvantages to both hedging and contracting. In most cases, what is listed as an advantage for one strategy is a disadvantage for the other. For example, the advantages of using the futures market is:

Flexibility -- in choosing the delivery time, and setting the basis.

Flexibility -- in changing one's mind, in case market conditions change.

The disadvantage in using the futures is that the producer (and his lender) must: 1) Understand how the futures markets operate and relate to the farm business, 2) Put up margin money, and perhaps additional maintenance margin money.

b. At harvest time, the producer can:

1. Deliver and price at the harvest
2. Deliver and price at harvest -- buy offsetting futures contracts
3. Store on farm and/or in commercial storage for later sale
4. Deliver and Price Later (DP) -- title is transferred upon delivery
5. Deliver at harvest with the basis fixed, with the price based on the futures at a later date, minus the set basis.
6. Basis contract
7. Deliver at harvest and delay or defer payment until after Jan. 1 - to defer income for tax purposes.

There may be a partial payment of 75-80 percent of the current price when selling on a basis contract. In this option, the producer can avoid paying storage costs, but he gives up the opportunity for basis appreciation.

With DP sales, there is a fixed service charge (in the range of 15-20 cents per bushel for corn) for the first 2-3 months, then a variable service charge or 2-3 cents per bushel per month. Title passes at time of delivery and the producer is a creditor to the buyer. There is usually no payment until the price is fixed.

After harvest, when grain is stored, it can:

1. Be left unpriced
2. Forward Priced
 - a. Using the futures market
 - b. Forward contract
3. Basis Contract
4. Be fed to livestock
5. Placed under CCC loan and the Farmer Held Reserve, if the producer has met eligibility requirements

Sources of Financial Risk

1. Price level change -- the producer makes a speculative decision on pricing. There are 2 types of risk; he can:
 - a. Accept a poor price
 - b. Pass up a good price
2. Basis Risk -- this can be improved through hedging
3. Cash Flow Risk -- especially when hedging -- margin account must be maintained.
4. Storage -- The producer is responsible for maintaining quality. Discounts for spoiled grain may mean the income is less than expected.
5. Default on the part of the buyer -- Bankruptcy.
6. Increased production costs when feeding livestock to heavy weight.
7. Severe discount for selling overly fat livestock.

The proper way to manage risk is different for each producer. It depends upon the producer's:

- a. Equity position -- what are the implications of losing?
- b. Marketing skill of the producer. This covers the complete spectrum. The producer with more marketing skill can take more risk.

What can producers do to improve marketing? This topic also depends upon the specific situation and the skills and ability of the individual. General guidelines include:

1. Know your production costs - enterprise record accounts.
2. Spread sales -- use scale up and/or scale down selling.
3. Become familiar with factors that affect supply-demand conditions.
4. Understand technical analysis -- it can be a valuable tool for selective hedging strategies.
5. Hire a marketing consultant.

Producer Marketing Education

The winter of 1982-83 is the "Teachable Moment" for anyone in Marketing work. Nearly all producers want to learn more about Marketing. The demand for Extension Educational Programs is running very high. As educators, how should we go about filling this need? What should we teach?

1. One of the first things to remember is a basic principle of Adult Education. Educators tend to be "subject matter" oriented. We want to hold a meeting on Hedging, or Marketing Alternatives. Adults are "problem oriented". By this, I mean they are interested in improving their marketing skills because they have, or may have, an income problem. In view of this, we communicate only when we relate hedging and/or marketing skills, (or any other topic) to

their problem. This means our examples should be up to date, real world problems, and use data applicable to their area.

2. If you want to communicate, engage the people in conversation. If this is not possible, get them involved in working through an example.

3. A series of meetings is better than single meetings, particularly if they are scheduled about a week apart, during the time that farmers are not busy in the fields.

4. Charging a reasonable fee improves the educational environment in 2 ways:

a. You get the producer's attention. If they pay for something, they are going to get their money's worth.

b. It put the pressure on the instructor to perform -- but it also provides some funds to supplement the resources available.

5. Provide notebooks, and texts. Make it resemble a classroom situation.

What Should We Teach?

This must be adapted to the area and the commodity. In Grain Marketing in Indiana, I start out with the basics. In essence, I try to pick out the highlights of my semester course in Grain Marketing and condense it into 6 sessions - 3 hours each.

The broad topics covered include:

1. Fundamental Price Analysis
2. Technical Price Analysis
3. Economics of Drying, Shrinkage, Storage, and Grade Factors
4. Marketing Alternatives
5. Developing a Marketing Plan

At each meeting, the current market situation is discussed. Government crop reports, weekly export inspections, soybean crush statistics, and crush margins are likely topics.

In the livestock area, you could target meeting around a producer group, such as cattle feeders, and hold quarterly meetings following the release of major reports. The same could be done for hog producers. Topics such as selling on grade and yield, hedging livestock, how to compare bids, etc., could be taught.

"There is no Royal Road to mathematics". That's one of the best lessons I learned from my high school principal who taught Math. The same lesson is true of marketing -- "There is no royal road to marketing". If the producer wants to improve his skills, he must work at it.

The stakes are high. He must get involved. He must become a professional. This takes time and effort. It's not unreasonable for an average producer to spend 20-30 minutes per day keeping up with the current marketing statistics and conditions and perhaps 1-2 hours per week on studying marketing information. If he is a large specialized farmer, someone in the organization could likely spend the majority of his efforts in handling the marketing tasks. If they don't have the skill or the inclination to do this, then the tasks should be turned over to a professional firm, or the producer should decide to settle for a lower return. Making marketing decisions involves risk. And where there are risks, there are also opportunities.

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The object of this talk is to provide a status report on certain rural issues and conditions that have been prominent among the goals of rural development and that continue to influence the course of rural development activities.

It seems to me that contemporary efforts at rural development trace back to the initiative begun in 1954 in the Benson Administration by Undersecretary True Morse. These beginnings were largely hortatory. There was no Federal money offered, but rural communities were urged to face up to the reality that population in a majority of rural areas was declining because so much farm labor was being made surplus by technological changes, that rural income was typically low, and that neither of these problems would be remedied without economic diversification. The Freeman Administration that followed became very active in promoting rural development, and many Federal assistance programs of the 1960's benefitted rural areas. It was 1972, however, during the Butz Administration, before a explicit Rural Development Act was passed by Congress. In all this time, it seems fair to say that stabilization of population and provision of income through job development have been basic underlying rural development objectives. Quality of life would improve if these goals were achieved.

Population Change.--All through the 1940's, '50s, and '60s, large numbers of people left rural and small town areas. The farm population fell by more than two-thirds, from 30.5 to 9.7 million. Especially in the first two decades, a majority of the rural counties had outright population decline, and many others had very little growth as they gave up most of their potential natural increase in outmigration. Outmovement was especially heavy among young adults. The age composition was undercut by this trend and median age of the population rose rapidly. In several hundred rural counties more deaths began to occur than births, because there were so few families of childbearing age left in relation to older people.

In the latter part of the 1960s, however, signs of a reversal of trend began to appear. Although extractive industries were still plagued with employment declines, a significant number of rural areas began to acquire population and commercial growth through resort development, retirement influx, or decentralization of manufacturing.

Typically these changes preceded any major or explicit Federal rural development efforts. They came through growth of urban discretionary income and leisure time which stimulated the rural recreation and second-home economy; through the maturing of public and private pension systems that produced a rapidly increasing number of retirees, younger and more affluent than those of the past, who sought rural retreats; and through a growing sense of need by urban manufacturers to solve serious problems of labor supply, wages, worker performance, land prices, taxes, or other burdens by relocation to smaller communities. Clearly government programs such as the Interstate Highway System, or the creation and subsidization of recreation areas (e.g. through dam reservoirs or national forests) and electric power facilitated such trends. However, the literature of that day shows almost total lack of perception of the rural demographic and economic growth that was about to occur.

In the early years of the 1970's, it became evident that rural and small town growth had accelerated so much that for the first time in modern history the population was increasing at a more rapid rate in nonmetropolitan counties as a whole than in the metropolitan areas. More people were moving to rural and small town settings and fewer were moving out. This trend continued through the decade. The results of the 1980 Census imply that anywhere from 3.5 to 4.0 million more people moved into nonmetropolitan counties than out of them from 1970-80, compared with a net outmigration from the same counties of 2.8 million in the 1960s.

Thus, the long-lamented overall exodus of people from rural communities has ended, at least for now. But, the forces that produce such change do not act evenly and there is much diversity in the trend. On one end are more than 100 counties in which population grew by more than 50 percent in the '70s, principally in the West. At the other extreme are over 450 nonmetropolitan counties in which population decline occurred, concentrated in the agricultural areas of the Great Plains and Corn Belt. In a majority of such cases the loss followed earlier losses in the 1950's and 60's.

Although economic trends facilitated the rural and small town growth and in some instances were its sole cause, the role of social motivations has been critical. Surveys of newcomers or return migrants into the nonmetropolitan counties show that they typically give noneconomic, quality-of-life reasons for their moves--reasons that are a mixture of perceived advantages of the small-scale community and dissatisfaction with metropolitan urban life.

The movement of people into rural and small town areas involves persons of all ages, but the inmovement of older people is especially notable. It should be emphasized that the majority of nonmetropolitan population growth consists of people of labor force age, but many of the cases of rapid county or area growth prove to be retirement areas. These, in turn, are often general recreation areas as well. I estimate that counties in which the

population 60-84 years of age experienced a 15 percent or more growth rate in the 1970s from immigration had about 700,000 net inmovement of older people from 1970-80.

The traditional Sun Belt retirement areas, such as Florida and Arizona, have continued to attract retirees, but rural areas are now involved that are as widespread and different as the Maine Coast, the lake country of Northern Michigan, the mountain valleys of Western Montana, the foothills of the Sierra Nevada, the islands of Puget Sound, the shores of the Ozark reservoirs, and the valleys and hills of the Southern Blue Ridge region.

I do not think that retirement was often viewed as an explicit strategy of rural population stabilization years ago, but it has come to serve that role in a number of areas--some of them whose chronic outmigration losses seemed almost unstemmable a generation ago. Retirement growth stimulates bussiness. But, a rapid influx of older people also brings with it an increase in the need for specialized services for the elderly, in particular when people become truly aged.

Employment.--All rural job sectors grew in the 1970s except farming and the military. The largest sources of job growth came (in descending order) from retail trade, civilian government, services, and manufacturing. Every growing major industry group except services appears to have had a higher rate of job growth from 1969-79 in the rural and small town areas than in the cities and suburbs.

Only a minor part of the new rural growth is related to agriculture. Many of the new residents produce food for home consumption, and some engage in commercial production. We know this from observation and anecdotal evidence. However, employment data show no more than about 5 percent of the rural immigrants working in farming and the total farm population continues to decline. The vast majority of new rural residents either work in nonagricultural pursuits or are retired. Thus, the influx of new population has served to further dilute the relative role of agriculture and farm-related employment in the rural economy. Farm production may be greater than ever, but the great bulk of the clientele who live in communities eligible for the Department of Agriculture's rural development programs today do not work in agriculture or live on farms.

A measure of the change in dependence on farming is provided by a tally of the percentage of counties in the United States in which at least 20 percent of proprietors' and labor income was derived from farming. There were 2,016 such counties in 1950 (nearly 2/3 of all counties), but only 684 in the period 1975-77. During the 1970's, nonfarm wage and salary jobs in nonmetropolitan counties grew by 28.6 percent, while farm jobs drifted downward by about 10 percent. Today not more than 10 percent of all nonmetropolitan residents work solely or primarily in agriculture. An indetermined number of rural and small town people work in closely related jobs, selling goods and services to farmers or handling and processing their output. However, no matter how generously one estimates this related group, it still falls far short of embracing the majority of rural people.

Without the shift and growth in the nonmetropolitan economy, income levels would be lower than they are and many more areas would still have outmigration problems. However, the growth of rural employment during the 1970s has not made rural areas immune to the current recession. Indeed, one consequence of diversification may be the fact that the rural economy is more vulnerable to a general goods-producing industrial recession. It is not widely recognized that the unemployment rate in nonmetropolitan areas has become slightly higher than that in metropolitan America. In the third quarter of 1982, the rate was 9.9 percent in nonmetropolitan communities and 9.6 percent elsewhere. However, the conventional rate does not give a full picture. Nonmetropolitan areas show a higher percentage of "discouraged workers" who have given up looking for work because they do not think any is available and who thus are not even counted as in the labor force. In addition, a higher percentage of employed nonmetropolitan people are working parttime but want fulltime work. If the discouraged workers are added in to the unemployment data and a worker equivalent of one half of the involuntary parttimers is also added, the adjusted nonmetropolitan unemployment for third quarter 1982 was 14.8 percent, compared with a metropolitan rate of 13.5 percent. This disparity has emerged in the last several years, and is not entirely caused by the recession. In 1982 itself, total nonmetropolitan employment has declined somewhat (2 percent) although metropolitan employment has been essentially stable.

Income.---A generation ago when rural areas were losing hundreds of thousands of people annually, urban-rural income differences were commonly cited as a major reason for the move to the cities. In 1950, when total income data were collected in the census for the first time, the median income of rural families was only two thirds that of urban families. These data differ somewhat from those for more recent years tabulated strictly by metropolitan status, but the difference is a conservative one that does not exaggerate subsequent trends. In the two decades following 1950, rural and/or nonmetropolitan income improved and the relative gap with the cities narrowed. By 1973, a good farm year, the median income of nonmetropolitan families was 80 percent as high as that of metropolitan families. Since that time, however, there has been no further progress in closing the gap. In 1981, the nonmetropolitan median slid back to 78.5 percent of the metropolitan. Adjusted for changes in the value of the dollar, nonmetropolitan family income reached its highest absolute level in 1978, and declined by 9.7 percent in constant value terms by 1981. Metro income peaked in 1979, and dropped 7.3 percent by 1981.

Taking the 1970's as a whole there are several sources of income that increased at above average rates in the rural and small town setting. Among these are mining, service businesses, wholesale trade, communications and public utilities, and finance, insurance, and real estate. But more important than any of them has been the growth of transfer payments. Such payments, derived from Social Security, welfare assistance, and other sources of aid or government pensions, accounted for 11 percent of all

nonmetropolitan personal income in 1969. By 1979, they amounted to 15 percent, (compared with 12 percent in metropolitan areas) and their real value had nearly doubled. In general, the most rural counties have the highest dependence on transfer payments. Their levels are higher than those of core counties of large metropolitan areas. Another important source of nonmetropolitan income growth was investment income from rents, interest, and dividends.

Growth of rural jobs, increase in transfer payments, and movement of moderate income people into low income counties all acted to reduce the number of nonmetropolitan counties that had high proportions of people with poverty-level incomes. For example, in 1969 there were 66 counties in which more than half of the population had poverty level income. By 1979, there were only two counties in this group. The number with a third to a half of their people in poverty had dropped from 343 to 85. In effect, most low income rural counties had higher percentage rates of income growth in the 1970s than did other counties.

The darker side of the picture is that almost all of the poorest counties in the United States are still nonmetropolitan. (156 of 161 counties with the highest rates of poverty in the 1980 Census were nonmetropolitan, and 4 of the 5 metropolitan ones were heavily agricultural). In addition, better than four fifths of the poorest counties can be described as chronic "culture of poverty" areas. In these cases the condition of low income has persisted for generations and is associated with populations having a high percentage of blacks, Mexican-Americans, or American Indians and Alaskan Natives, or located in white Southern Highland areas. In these areas rural development occurs in the context of disadvantaged minorities or in the face of such conditions as comparatively high percentages of persons with work-limiting health conditions. Altogether, the 1980 Census reported that 8.6 million nonmetropolitan people were living with poverty level income (or 15.4 percent of the total). This compared with 11.9 million people in the 1970 Census, comprising 19.2 percent of the total. Although the incidence of poverty is still greater in rural areas and small towns than in metropolitan areas, more progress was made in the rural setting. In metropolitan areas the poverty rate was a little more than 11 percent in both 1970 and 1980.

Mississippi continues to be the State with the highest rate of nonmetropolitan poverty (26.7 percent of the population) Connecticut and New Jersey were the best with rates of about 7 percent. When one considers numbers of people, Texas led the country with more than a half million rural and small town poor.

Conclusion and Outlook.-- In each of the three areas surveyed -- population, jobs, and income -- major progress has been made, whether independently of rural development efforts or because of them. The scale of problems has been reduced, and in that sense future needs may be more manageable. But it is also clear that both chronic and acute problems of population retention, job availability, and adequate income are still common. Much remains to be done.

The influx of retired population has been abetted by the fact that in the last two decades the average age of retirement has fallen and income from pension sources has risen at a faster rate than the cost of living. Today, however, with budget deficits, longer expectation of life, and smaller numbers of entry level workers, discussions of the possible need to reduce pensions or raise age of retirement fill the news media. Should such actions take place, they would probably moderate the flow of older people to rural and small town settings, but not halt it.

It is conceivable that the easy gains in rural job growth have been made, such as the attraction of a large new, undemanding labor pool -- especially women -- or the decentralization of certain industries seeking lower costs. Substantial cutbacks have occurred in certain rural manufacturing sectors, such as shoes and clothing, where foreign competition has become severe. There seems uncertainty whether the metalurgical, automotive, and housing industries will recover to their former levels. Many rural communities are tied to these industries. Furthermore, State and local government employment was a strong source of job growth in nonmetropolitan areas in the 1970s, and this may now have run its course in the current era of budget cuts.

If rural economic progress lags -- as it has in the last several years -- will population continue to be retained in and to flow to rural areas? Social motivations for rural and small town residence have been strong enough that many employed people living in such areas have accepted less money than they could have made in the cities. Some of the income deficit may be made up by lower cost of living, but not all of it. I think it beyond question that the higher population growth rate of nonmetropolitan areas in the 1970's was partly produced by the higher job growth of the same areas. If that support is lacking in the 1980's then population growth or retention will be reduced also, although I think it unlikely to end.

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Local government activity has increased substantially during the past two decades. Few would be surprised to hear that spending by localities grew from approximately \$45 billion in 1960 to almost \$220 billion in 1980, nearly a four-fold increase. Nor would the near doubling of real (constant dollar) local spending between 1962 and 1980 come as a great shock. Media coverage of the larger cities' fiscal problems has given even those with only a casual interest substantial information about local government finance.

Most of what is popularly known, however, concerns the finances of central cities. Today, I want to partially redress that information imbalance by focusing attention on a different set of governments, those where spending is substantially below national norms. This group, which I will call counties below a poverty line for government services, has received relatively little recent public notice. Now, following two decades of institutional changes thought to improve the poor's access to local services, it seems appropriate to analyze whether service levels have actually improved. Such an analysis seems particularly timely in light of current attempts to redefine the role of the federal government vis a vis the States and localities.

The paper which follows has three major sections. It begins with a relatively short discussion of overall trends in local government spending from 1962 to 1977. That section is designed to provide a background against which changes in the number of counties below a poverty line for government services can be measured. The major portion of the paper is then devoted to examining progress made toward guaranteeing access to a minimum adequate standard of local government goods and services. The final section notes socio-economic characteristics of counties below a poverty line for government services in 1962, 1972 and 1977.

Before I begin, two brief technical notes. Data restrictions force most of the discussion to focus on the years 1962, 1972, and 1977. The Census of Governments, the only consistent data source providing information on all local governments, is conducted only at five year intervals. Similarly, inter-state differences in the level of government responsible for providing some services force most comparisons to be done on the basis of local government expenditures by all local governments within a county area.

TRENDS IN LOCAL GOVERNMENT FINANCES: 1962-1977

Three primary trends in local government finance were apparent during the sixties and seventies. The first, the large increase in local spending (even when adjusted for inflation), is generally well-known. The second, the increased percentage of local revenues coming from higher levels of governments, less so. The third trend, a widening dispersion of expenditure levels, has received little notice. Each of these items is discussed in more detail below.

First, however, I want to draw your attention to the major institutional changes affecting local government during the sixties and seventies. This may cover old ground, familiar to most of you, but in putting together the list I was struck by both the number and the importance of the changes which occurred. Changes included passage of Medicare-Medicaid, the Economic Opportunity Act, and the rest of the Great Society Programs; passage of General Revenue Sharing; the shift from categorical aid to block grants; the tax-expenditure limit proposals, of which California's Proposition 13 received the most publicity; and the peaking of federal aid in the late seventies. Events equally important to local governments, but with less direct effect on local finances include enactment of civil rights legislation, particularly with respect to voting rights; Baker v. Carr, the one man one vote rule which ended rural domination of State legislatures; the continuing flow of school desegregation decision; the Serrano decision in which a State court held that the educational quality available to students should not depend upon the wealth of the school district; and the National Environmental Policy Act which established a federal role in the control of water and air pollution. Individually, each change had important implications for local government finances. Together they virtually remade the policy arena in which local governments operate.

Increased Expenditures

Local government expenditures averaged \$802 per capita in 1977. SMSA county spent somewhat more, \$860; rural counties averaged only \$648 per capita. Expenditures in 1962 were \$234 and \$180 per capita in SMSA and nonSMSA counties, respectively. Local government spending increased by more than 250 percent during that 15 year interval.

That rate of increase is deceptive, however, since prices of almost all goods and services have increased dramatically from their 1962 levels. Expressing expenditures in terms of dollars of constant purchasing power provides a more accurate reflection of the true extent of the growth in local government spending.

Even in constant dollar terms, however, the increases are impressive. For all counties, real local government expenditures rose from \$222 per capita in 1962 to \$316 in 1972 and \$326 in 1977, an increase of nearly 47 percent over 15 years. From 1962 to 1972 such spending increased at an annual rate of more than 3-1/2 percent in constant dollars. Similar rates of increase were found in both SMSA and nonSMSA counties. Real spending grew from \$234 to \$345 and then to \$349 per capita in the urban counties, and from \$180 to \$240 and to \$263 in rural counties.

Spending on local education, the largest area of expenditures, during that period showed an even more dramatic shift, increasing forty-four percent between 1962 and 1972, then declining in real terms between 1972 and 1977.

A slightly different view of changes in local spending can be obtained by examining changes in the ratio of local government spending to personal income. The period 1962-1977 was one of significant real economic growth, and one would expect that a portion of that increase would go for additional

local government services. The ratio of local government spending to personal income appears to have remained relatively constant during that period. A slight downward trend may have occurred, but variation about that trend has been significant. Actual percentages ranged from slightly more than 10 percent in 1962, 1972, 1975, and 1976 to approximately 9.4 percent in 1978.

Increased Reliance on State and Federal Aid

The second major shift in government finances between 1962-1977 was the increased local dependence on State and Federal aid. Changes in the sources of local government revenue are shown in table 1. Intergovernmental aids were only 30 percent of local revenues in 1962. They increased to 38 percent by 1972, and to 43 percent by 1977. The increase between 1962 and 1972 was primarily, but not entirely, due to additional State aid. After 1972 federal aid, including general revenue sharing was the source of the growth.

Although the pattern was similar for both urban and rural counties, rural counties have been more dependent on others for revenues. Local governments in metropolitan areas received only 27 percent of their funds from State and Federal aids in 1962, while rural counties received 38 percent. By 1977, that gap had closed considerably with SMSA counties receiving 42 percent, and nonSMSA counties, 47 percent of their funds from higher levels of government.

Property taxes, the predominant revenue source in 1962 steadily diminished in importance, during that period, declining from 48 percent of revenues in 1962 to 33 percent in 1977. This change, it should be noted, was prior to Proposition 13.

Widening Range of Expenditures

The dispersion of local government expenditures around the mean grew considerably between 1962 and 1977. Per capita operating expenditures in 1962 were concentrated within a relatively narrow band; their standard deviation was only \$46. By 1977 the distribution had spread considerably and its standard deviation had more than tripled to \$156. The same pattern was observed for per pupil education spending. The disparity in local government spending levels has increased considerably during the past two decades.

Such a trend is not necessarily detrimental, however. Individuals' tastes for public and private goods are not identical and there is no reason to suspect that a system which forces everyone to consume identical levels of public services will be more satisfactory than one allowing more diversity of choice. What is important to determine is whether differences in spending are due primarily to demands for service levels above national norms, or whether the disparity is due to increasing numbers of communities unable to afford minimum adequate service levels.

PROGRESS AGAINST A POVERTY OF GOVERNMENT SERVICES: 1962-1977

Before improved access to local services can be noted, a minimum adequate service level, or poverty line, must be established to serve as a standard for comparisons. For local government services that task is complicated by the fact that actual measures of local government output are not available nationally. As a result, one must use local government spending as a proxy for local service quality.

A poverty line for government services could be defined in a number of ways. One could, for example, choose an arbitrary dollar value below the mean expenditure, or that level of spending below which 25 percent, or some other percentage of the population fell. It would also be possible, using synthetic budgets, to construct a minimum adequate expenditure level based on standards set by appropriate professional organizations. For various reasons, none of those methods were used.

Instead, a slightly different approach, relying on the theory of revealed preferences was adopted. In simplest terms what was argued was that citizens can assess the quality of local government services they receive, and that through the political process, they can adjust the amount and quality of services provided to levels consistent with their preferences.

Under these assumptions spending levels equivalent to a minimum adequate service level can be identified by selecting a group of counties in which one would expect to find public service offerings consistent with citizen preferences, (not held to sub-standard levels due to short term adjustment problems or constraints on income). The lower bound of this group's expenditure distribution could then be used as a standard against which spending in all counties in the nation could be compared. Such a method has the advantage of providing a fixed standard against which progress over time can be measured, while at the same time providing a mechanism which allows the incorporation of changes in tastes or responsibility for services in that minimum standard.

Expenditure standards for this study were developed using counties in the 4th through 7th deciles of 1970 median family income as a reference group. Local government spending in those counties was assumed to be sufficient to meet local preferences. A sample was drawn from that group, and two lower limits for expenditures identified. The first, corresponding to the level of spending exceeded by 95 percent of the counties in the reference group, was called the lower bound poverty line. An upper bound poverty line, the spending level exceeded by 85 percent of the counties in the reference group, was also noted. Lower and upper bound poverty lines were identified for per capita local government operating expenditures (less spending on highways, welfare, and hospitals to allow for interstate differences in functional responsibilities) and for per pupil operating expenditures for local education.

Results, 1962

Slightly more than 3 percent of the nation's counties--107 counties in 14 states--were below the lower bound poverty line for government services in 1962. Nearly twice as many counties--194 in 14 States--spent at levels less than the lower bound line for education. More than 2.8 million people lived in counties below the local government services line, while approximately 1.3 million children attended schools in counties where per pupil spending for education was far below national norms.

Substantially larger numbers of counties were below the upper bound poverty lines. One thousand seventy-four counties in 32 States--more than 28 million people--were below the upper local expenditure line, while 750 counties in 30 States--5.9 million pupils--were below the upper bound for spending on local education.

Counties below lower bound spending levels were concentrated in the South. More than 50 percent of those spending less than the standard for local education were in Alabama, Arkansas, or Mississippi. Nearly two-thirds of those counties below the lower local government expenditure standard were in the 4 States of Arkansas, Mississippi, Tennessee, and Virginia. In 10 States, 80 percent or more of the counties spent at levels less than the upper bound for local government services. Only 5 States--Alabama, Georgia, Mississippi, South Carolina, and Tennessee--had 80 percent or more of their counties below the upper bound for education.

Use of average per capita (or per pupil) expenditures within a county area as a measure of local government service adequacy is not entirely satisfactory, however. Problems with using any expenditure measure as a proxy for quality are well-known and will not be dealt with here. In addition, use of county area averages may also hide significant intra-county differentials in services. Counties below a government services poverty line may have localities in which services are more than adequate, while counties above may have areas where services are substandard.

These problems in determining the actual number of people receiving less than a minimum adequate level of services leave one hesitant to emphasize the absolute size of estimates of that population. But, such estimates, with all their problems, are useful standards for measuring the nation's progress in improving access to local government services. The next two sections examine that progress between 1962 and 1977 under two alternative sets of assumptions.

Progress, 1972 and 1977: Absolute Standard

One way to update 1962 government services poverty lines so they may be used in 1972 and 1977 is to adjust only for price increases. This assumes that the minimum service level in 1962 remained relevant through 1977. An absolute standard, it allows for no changes in tastes over time, nor does it allow for the possibility that technological improvements have made it possible to provide the same level of service at a lower cost. It simply measures the present costs of producing the same market basket of goods and services, using the same inputs and technology, as before.

When actual expenditures in county areas in 1972 and 1977 were compared to the absolute standards created by multiplying the 1962 standards by 1972 and 1977 implicit price deflators for State and local government, there was a dramatic decrease in number of counties below the government services poverty line (table 2). Eight counties (138,000 people) were below the lower bound for local government spending in 1977, and 9 counties (18,511 pupils) spent at levels less than the lower bound for education. Results using the upper bound measure were similarly impressive. Only 59 counties, 895,000 people, were below the standard for local services in 1977 compared to the 1074 counties, 28.3 million people, below in 1962. Thirteen counties (47,000 pupils) were below the upper bound for education in 1977.

Closer examination of those counties below either education standard or the lower bound for local government services revealed that in almost every instance the low spending levels could be attributed to unusual institutional structure--military bases or Indian reservations dominating the county--or to problems of allocating local expenditures in cities and school districts which cross county lines.

If one accepts the absolute standards, it appears that by 1977 virtually everyone in the United States lived in a county in which per capita local government expenditures, and per pupil expenditures for education, adjusted for inflation, exceeded the level thought minimally adequate in 1962. Either consciously--through increased State and federal aid--or accidentally, there has been a major improvement in access to a minimum adequate level of government services.

Results, 1972 and 1977: Dynamic Standard

Absolute standards, however, may produce meaningless, even misleading comparisons when used over a long time period. Such measures identify the extent to which access to a particular set of goods and services has changed. They say nothing about whether that particular market basket is still the appropriate one to consider. Changes in tastes, technology, and real income all could affect the public's definition of a minimum adequate service level and yet go unrecognized. Since, as noted earlier, the years studied span a period of substantial changes in local responsibilities, it is unlikely that the level of service considered adequate in 1962 would be considered sufficient in 1977.

Dynamic standards incorporating changes in tastes as well as prices were developed by using the same method as was used to obtain the original standards, substituting 1972 and 1977 expenditure data for that in 1962. Once again upper and lower bounds for both local government services and education were estimated.

Improvement, while not as dramatic as with the absolute measures, was once again considerable (table 3). Counties spending less than the lower bound for local services decreased by 50 percent. By 1977 only 48 counties with approximately 800,000 residents were below. For education the number of counties spending less than the lower bound decreased by almost 25 percent to 159 counties (about 1 million students). The percentage decrease in number of counties below the upper bound for local expenditures was also substantial. The number below fell from 1074 to 570--28 million to 11.8 million people. But, the number of counties spending less than the upper bound for education remained virtually constant over the 15 year study period.

Counties below the dynamic poverty lines for local services remained concentrated in Southern and Appalachian States. The incidence of government services poverty in those States was much less pervasive, however. Only two States--Arkansas and Kentucky--had as many as seventy percent of their counties below in 1962. Substantial reductions in counties below occurred everywhere but Oklahoma and South Dakota where 6 and 4 additional counties, respectively, fell below. Some States--North Carolina, South Carolina, Virginia and West Virginia had decreases of sixty percent or more (from very large bases) in the number of counties below the upper standard in 1977.

Results using the education standard were quite different. Seven States had more than 75 percent of their counties below the 1977 upper bound poverty line. More than 50 percent of the counties in Mississippi were below the lower bound in 1977. Mississippi had more than 25 percent of the counties spending less than the dynamic lower bound for education. Five States--Alabama, Georgia, Mississippi, South Carolina, and Tennessee--accounted for more than 80 percent of the counties below the lower bound.

In most States the number of counties spending less than the upper dynamic standard for education remained relatively constant. Exceptions were Georgia, North Carolina, and West Virginia where there were decreases of 20 or more in the number of counties below between 1962 and 1977, and Oklahoma, which had an increase of 27 in the number of counties below in the same period.

CHARACTERISTICS OF COUNTIES BELOW A POVERTY LINE FOR GOVERNMENT SERVICES

Poor counties were heavily represented among those counties spending below national norms for local government services. So were counties with a high proportion of Blacks. Demographic variables other than those related to income or race had little relationship to the incidence of government services poverty. Differences in population, population density, percent urban, and degree of rurality as measured by Hines, Brown, Zimmer code--all had almost no effect on the likelihood that a county's local governments would spend at levels below the poverty line.

In 1962, forty-five percent of those counties below the lower bound for local services, and 49 percent of those spending less than the lower bound for education were in the tenth decile (the poorest 10 percent) of counties when ranked on percent of families with incomes below the 1969 poverty line (table 4). Seventy-three percent of counties below the lower local services line, and 84 percent of those below the education standard were in the bottom 3 deciles.

When 1962 upper bound levels were used, 43 percent of those below the local services standard and 49 percent of those below the education line were from the poorest 20 percent of counties. Approximately two-thirds of the counties in the poorest decile spent at levels less than either the local expenditure or the local education standard.

By 1977 characteristics of those below the lower bound for public services had changed noticeably. Only 15 percent of the counties below were from the poorest decile, compared to 45 percent in 1962. Between 1962 and 1977 spending in 43 of the poorest counties had increased to levels above the lower bound, although spending in two other poor counties fell below that level by 1977. This improvement is particularly notable when compared to that in the 9th decile where only 2 fewer were below in 1962 than in 1977. By 1977 twice as many counties in the 9th decile as in the 10th were below the lower local services line.

Improvement by poor counties was not as dramatic on the other measures. The number of the poorest counties below the upper bound for local services fell from 226 to 121, more than a 45 percent decline, but the ratio of those below in the tenth decile to the total number below remained constant. The incidence of local government services poverty among counties in the poorest two deciles fell considerably, however, from more than 75 percent to less than 40 percent.

Progress by poor counties in spending for education between 1962 and 1977 was minimal. This was especially disquieting since substantial improvement apparently occurred between 1962 and 1972. For example, the number of

counties below the lower bound for education, who were also from the poorest ten percent of counties fell from 96 in 1962 to 28 in 1972. In 1977 that number increased to 80. A similar pattern--201, 139, 189, for 1962, 1972 and 1977 respectively--was observed for those below the upper bound for education.

Closer examination revealed a number of counties shifted from below to above, or above to below the education spending line between 1962 and 1977. Of the 96 counties below in 1962, 44 spent at levels greater than the lower bound by 1977. Twenty-eight additional counties from the poorest decile, however, fell below after 1962.

The pattern for the other apparently relevant demographic variable, percent Black in 1970, was similar to that for percent in poverty (table 5). Forty counties, 37 percent of those below the 1962 lower bound for local services, were from the blackest ten percent of U.S. counties. By 1977, only 5 counties, 10 percent of those below, came from that group. Progress in percentage terms was not as dramatic when the upper bound was used as a standard, but the actual drop in number of counties below, from 248 to 107, was still impressive. Despite that, however, approximately one in three of the blackest 10 percent of U.S. counties was below the upper bound for local services in 1977.

Results for Black counties were similar to those for low income counties when changes in the number below the education standard were examined. In 1962 ninety-five of the counties below the lower standard (about 49 percent) were from the blackest 10 percent of counties. In 1972, fourteen counties (about 8 percent), and 1977, ninety-seven counties (about 60 percent) were from that group. Those below the upper bound followed a similar pattern 220 in 1962, 109 in 1972, and 211 in 1977. Sixty-two of those below the lower bound in 1962 and 1977 were above the lower limit for education spending in 1972. Twenty-two of that group were above the upper limit as well.

CONCLUSION

Although this research leaves a number of important questions unanswered several potentially significant findings emerge. Among the more interesting and policy relevant are the following:

- If one accepts 1962 levels of local government spending in middle income counties as a proxy for a minimum adequate level of government services, it appears that by 1977 virtually everyone in the United States lived in a county where services were adequate. This is a major improvement in access to a minimum adequate level of government services. Changes in institutional structure appear to have equalized access throughout the nation to levels of local services and education thought adequate in 1962.

- If one allows for changes in tastes between 1962 and 1977, however, progress has not been as dramatic--particularly in spending for local education. The greatest improvement occurred in expenditures for local services where the number below either the upper or the lower bound decreased by about 50 percent during the 15 year period. The number below the lower standard for education spending decreased by about 20 percent by 1977, those below the upper bound, by only 3 percent.

- Low income counties gained improved access to the level of local service thought minimally adequate in 1977. The number of counties below either the lower or the upper dynamic poverty line who were also from the poorest counties declined substantially. Still, though, approximately 25 percent of all counties below the upper bound came from that decile, and nearly 40 percent of the counties in that decile were below the upper local expenditure standard.

- Findings were discouraging for those hoping to see improved access to educational quality in poor counties. Substantial progress appeared to be made between 1962 and 1972, only to be almost totally lost by 1977.

Table 1. Local Government Revenue Sources as a Percentage of Total Revenue for County Areas

	Intergovernment Aid			Taxes		Charges and Other Revenue
	Total Aid	Federal Aid	State Aid	Property Taxes	Other Taxes	
	----- Percent -----					
All Counties						
1962	30	2	28	48	7	15
1972	38	5	33	40	8	15
1977	43	11	33	33	8	15
SMSA Counties						
1962	27	2	25	50	8	15
1972	36	5	32	40	9	14
1977	42	12	32	34	9	14
Non SMSA Counties						
1962	38	2	37	44	3	15
1972	42	3	39	37	4	17
1977	47	11	39	31	4	18
Counties with population between 10,000 and 50,000						
1962	40	1	39	42	3	15
1972	44	3	41	34	4	19
1977	48	10	41	38	4	19
Counties with population less than 10,000						
1962	38	1	37	46	4	13
1972	39	2	37	43	3	16
1977	42	10	35	38	3	17

Source: Thomas Stinson, "Fiscal Status of Local Governments," in Nonmetropolitan America in Transition, 1981. Amos H. Hawley and Sarah M. Mazie, eds., Univ. of North Carolina Press, 1981.

Table 2: Progress Against Local Government Services Poverty, Absolute Standard, 1962-1977

	Number of Counties	Population (Pupils)
Current Expenditures, Lower Bound		
1962	107	2,806,501
1972	10	156,379
1977	8	138,349
Current Expenditures, Upper Bound		
1962	1074	28,315,461
1972	193	3,601,478
1977	59	895,501
Education Expenditures, Lower Bound		
1962	194	1,342,142
1972	12	38,243
1977	9	18,511
Education Expenditures, Upper Bound		
1962	750	5,858,233
1972	60	306,395
1977	13	47,081

Table 3: Progress Against Local Government Services Poverty, Dynamic Standard, 1962-1977

	Number of Counties	Population (Pupils)
Current Expenditures, Lower Bound		
1962	107	2,806,501
1972	82	1,594,504
1977	48	789,451
Current Expenditures, Upper Bound		
1962	1047	28,315,461
1972	567	11,897,042
1977	570	11,826,347
Education Expenditures, Lower Bound		
1962	194	1,342,142
1972	168	969,520
1977	159	1,081,387
Education Expenditures, Upper Bound		
1962	750	5,858,233
1972	736	5,401,036
1977	730	5,176,803

Table 4: Counties below a poverty line for government services by decile, percentage of families below 1969 poverty level.

	1	2	3	4	5	6	7	8	9	10	n
	Decile										
All Local Services, Lower Bound											
1962	48	16	15	13	5	5	2	2	0	1	107
1972	18	16	17	12	9	3	5	0	1	1	82
1977	7	14	6	9	5	2	3	0	0	2	48
All Local Services, Upper Bound											
1962	226	235	162	133	111	82	49	36	23	17	1074
1972	124	128	99	84	59	31	23	8	9	2	567
1977	121	127	113	85	54	33	19	11	5	2	570
Local Education, Lower Bound											
1962	96	42	26	12	4	6	1	0	6	1	194
1972	28	30	36	23	20	8	16	3	3	1	168
1977	80	33	13	15	7	3	5	1	1	1	159
Local Education, Upper Bound											
1962	201	167	122	80	65	36	25	22	18	14	750
1972	130	130	106	111	94	53	45	26	26	15	736
1977	189	143	123	99	73	30	29	19	17	8	730

Table 5: Counties below a poverty line for government services by decile percent black, 1970.

	1	2	3	4	5	6	7	8	9	10	n
	Decile										
All Local Services, Lower Bound											
1962	40	11	11	8	9	6	7	4	7	4	107
1972	7	9	16	11	10	11	3	3	8	4	82
1977	5	3	6	4	5	5	5	3	7	5	48
All Local Services, Upper Bound											
1962	248	173	153	117	97	97	53	41	63	32	1074
1972	114	77	87	72	63	52	28	21	36	17	567
1977	107	73	82	78	63	50	30	27	45	15	570
Local Education, Lower Bound											
1962	95	29	18	6	10	10	7	7	8	4	194
1972	14	24	27	28	23	22	4	5	16	5	168
1977	97	28	5	7	4	5	4	3	2	4	159
Local Education, Upper Bound											
1962	220	129	95	66	62	54	38	27	35	24	750
1972	109	127	127	83	86	68	30	34	47	25	736
1977	211	123	93	84	68	45	21	26	31	28	730

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Public service delivery and financing are greatly affected by population growth, but public services can also be a factor in causing population growth. The living climate resulting from the way services are provided and financed can be a factor in attracting population growth, but population growth can be the source of fiscal stress and problems in adequate service delivery. This paper is an analysis of these interactions between population and public services. More space is devoted to discussing how population growth affects service delivery because of the many elements involved, but both sides of the coin are important issues for policymakers.

How Public Service Delivery Affects Population

The many causes of the rural turnaround in the 1970's have been a much considered topic. Some people have gone to rural places for employment opportunities, some for retirement, and others for an alternative lifestyle. Our purpose is not to judge the various reasons for the shift but to point out that public service delivery can be one factor in the success of an individual area's growth.

Service delivery and financing¹ affect populations in an area both directly, through attracting people, and indirectly, through attracting businesses. Consider first the influence of service delivery directly on population. Analysts are finding evidence that environmental and quality-of-life factors are growing in relative importance, along with economic variables, in determining the housing location patterns of people.² One important set of quality-of-life determinants is the public services provided in the local community. Quality of education, police protection, and fire protection are important inputs into the perceived living quality of a particular location. Similarly, basic components of the infrastructure such as water and wastewater control are key aspects of the living environment. Sprawl caused by residences locating along water or sewer lines illustrates the importance of the infrastructure.

A basic question is whether these services affect only the choice of locations within a given labor market or if they are a factor in the choice of people to live in one labor market versus another. The perceived overall living

1. For the duration of this section, financing is implicitly considered one aspect of service delivery.

2. For example, see Ben-Chieh-Liu, Quality of Life Indicators in U.S. Metropolitan Areas, Washington, D.C.: U.S. Environmental Protection Agency, 1975.

environment is a factor in people's decisions as to what labor market area they want to live in; and to the extent that public services are a factor in the perception of lifestyle in the general area, they influence the location people choose. Education, and in some cases, water and sewer facilities, may be important parts of this perception.

Frequently, the services are more important location considerations once people have chosen a particular labor market area. Then they can choose between alternative residential choices based on length of commute, housing supply, and public service availability. In this circumstance, the vitality of the general area is not influenced by service delivery, but locations within the individual communities in the labor market area are.

Much the same can be said about the indirect effects that public services have on attracting population through business locations. Business location decisions are often dominated by certain prerequisites to operation that must be in place before an area is considered. Depending on the industry, these could include access to raw materials, a highly skilled labor force, or access to a transportation system. After consideration of the prerequisites to location, and therefore choice of a region within which to locate, tradeoffs between location determinants are made. One set of location considerations is public service delivery.

Smith, Deaton, and Kelch concluded that public services (viewed broadly) have their most important influence on location decisions in communities which do not have either too many or too few locational attributes.³ That is, places which have substantial prerequisites may need little inducement for industry to locate, and places with few prerequisites may be able to do little to attract business. For the in-between places, Smith, Deaton, and Kelch found industrial site ownership by public groups, better fire protection, and availability of industrial revenue bond financing to be significant factors in increasing the probability of plant locations. Police protection, processed industrial water supply, industrial sewage processing, and solid waste disposal are other considerations that have been found to be important in plant location decisions.

In sum, public services can influence the location of business activity. In most cases, this influence will be on where the business locates within a given region rather than on the choice of a region.

An important side point must be made. Tax incentives are often used in an attempt to attract industry. The evidence suggests that taxes are of secondary importance in influencing the location of business and will rarely affect the location choices between regions of the U.S. The use of tax concessions can, however, have undesirable effects. From a national perspective, tax concessions to business are likely to be self-defeating because they do not influence the overall level of industry, only the geographic distribution within regions. Therefore, in aggregate, they are simply tax reductions for business. With

3. E. D. Smith, B. J. Deaton, and D. R. Kelch, "Location Determinants of Manufacturing Industry in Rural Areas," Southern Journal of Agricultural Economics, July 1978.

international firm locations becoming more important, the lost tax revenues must be envisioned as a net loss to U.S. citizens. The recent location of a Volkswagen plant in New Stanton, Pennsylvania may be an example of this.

Further, where tax concessions are granted, the location of business is likely to have a negative net effect on local government fiscal positions. To the degree this is true, the tax concession must be paid for by other taxpayers. Since the benefits of industrial location tend toward certain groups, this form of tax financing of business can have undesirable equity effects. For example, retired persons may receive no benefits from business and yet pay higher taxes to offset the industrial costs. This issue is discussed at greater length below.

Population Effects on Public Service Delivery

We will focus on the impacts that growing populations have on the fiscal climate of the growing communities. Declining communities may experience more severe difficulties, but the relative predominance of growth in rural areas and the lack of time preclude more than passing comments on the effects of decline.

With population growth comes increased revenues, but also increased expenditures. Thus, growth does not automatically spell improved fiscal conditions, but the net effects depend on which grows faster, revenues or expenditures. This discussion is separated into an expenditure and a revenue section. These are separable issues, as expenditures relate to the new demands for services and the cost of providing the services, whereas revenues refer to the mechanism for financing the services.

Expenditures

Several generalizations about expenditure-related population change impacts can be made. First, they are nonsymmetrical. Government expenditures do not grow both X percent for every Y percent increase in population and decline X percent for every Y percent decline in population. Difficulties in closing down part of a subway system illustrate why costs are not symmetrical. Similarly, road systems and other parts of the infrastructure cannot be easily expanded or contracted in a manner proportional to population change. Labor-intensive services, like education, can be shifted more easily when population changes, but even in these cases employment cuts can be difficult as population falls. Second, the change in expenditures (and fiscal effects) associated with a change in population depends on the speed of growth. Ten percent growth in population in a 100,000-person town imposes fewer costs than 100 percent growth in a 10,000-person town, though both places would grow by 10,000 people. These generalizations tell us that the impacts of population growth on expenditures must be examined separately for each community. Nonetheless, there are insights to be gained from studying the experiences of other places.

The response of service demands to population growth depends substantially on the characteristics of the new population. In-migrants are generally younger, and if migrating from the Northeast, may be used to a relatively large government sector. In selected places, however, growth may derive from development of retirement communities or return migration of people as they retire. Whatever the stimulus for a given community's growth, the in-migrants are unlikely

to have tastes and preferences which are identical to those of the existing population, so they can be expected to alter somewhat the existing voting pattern for officials, taxes, and service levels. Effects of shifts in the voter composition cannot realistically be forecast and rural communities can best adapt by being flexible to new ideas and preferences. Below, we refer to expenditures necessary to provide existing services rather than the expenditures to meet what may be new service demands.

Capital spending to expand the infrastructure and increased operating expenditures may both be necessary with population growth. First, consider capital expenditures. Need for capital spending depends on the excess capacity of the existing infrastructure. Those with excess capacity may be able to absorb rising populations without needing new capital, while others may need substantial infrastructure development to accommodate similar population changes. In many circumstances, for example, school systems may be able to accept a large number of new students by including one or two new students in each existing classroom. If the school system is operating at maximum pupil/teacher ratios, on the other hand, new school rooms must be added. Similarly, expanded roads, water and sewer systems, hospitals, and recreation facilities may be necessary in some communities but not in others, depending on the existing infrastructure. Thus, data on per-capita capital expenditures in other communities is unlikely to be useful for estimating impacts in any particular growing community.

The need for infrastructure development depends on characteristics of the community. Those that anticipated the growth may have prepared a capacity sufficient to handle new people. Those that have previously declined but began to grow again may have their infrastructure substantially in place. Others can be expected to need development and to suffer varying degrees of inconvenience. Similarly, those that have grown because of major industrial locations are likely to need infrastructure developments. In any event, those with the most rapid growth rates are most likely to have insufficient infrastructure.

Another demographic trend, that which indicates fewer people per household, may be as important in affecting infrastructure development as population changes. People per household in the U.S. declined from 3.14 in 1970 to 2.75 in 1980. Sewer and water lines, roads, and some other facilities are more dependent on the number of households and density of housing units than on the population size. The current trend will cause greater demand for facilities unless the density increases to offset the effects of more housing units.

New infrastructure to accommodate population growth or expanded housing units must frequently be put in place before the new population arrives, creating fiscal stress for those already in the community. The tax base already in place bears the burden of the infrastructure development and the construction process, for they may need to begin well ahead of tax base expansion. In boom towns, the problem of the in-place population bearing the capital costs may occur at both ends of the boom. As the boom begins, prudent planning may require beginning infrastructure development before the population locates. As the boom winds down and people leave, the remaining population may be left to pay the debts for infrastructure construction and maintenance on a facility with excess capacity.

Now consider operating expenditures. Discussion of operating costs immediately brings to mind size or scale economies, with the hope being that more people will mean lower service costs per capita. The preponderance of

studies fails to support any significant size economies for government services. Police, fire, and education services are labor-intensive and provided from small stations near people, so few savings result as population expands. Small communities may reap some benefits if they have one policeman whose services can be spread over 1,000 people rather than 500, but they may see all the benefits evaporate immediately as a second policeman is added for the first person over 1000. For larger places that make relatively continuous purchases of inputs, few size economies can be expected. Some other services, like water and sewer, may have operating cost economies, but these are likely to be offset by capital spending costs that rise rapidly with the number of housing units and population density. The evidence generally indicates that per-capita operating expenditures rise with population, because greater depth and breadth of services are provided. Rural communities which generally fail to offer the full scope of government services may find that expansions in the quality and types of services delivered will offset any small economies of size that can be achieved. In Table 1, it is shown that per capita local government expenditures drop as population goes from 10,000 to 50,000, but rise consistently as population increases above 50,000. Per-capita expenditures for the largest cities average 58 percent more than for the smallest. In sum, small communities may find some cost reductions as population expands, but economies of size should not be expected to provide large savings for growing communities.

Revenues and Fiscal Position

Economic activity is the basis of public revenue, and any increase in activity will increase revenue flows. As growth occurs, revenue flows are likely to balance with expenditure needs over time. This is true, at least, if the new residents and industries earn incomes that are, on average, equal to those earned by current residents. Significant reductions in millage rates are unlikely because new businesses and people will not only increase revenues but will also increase the demands for services.

There are circumstances in which revenues may be insufficient to cover the expenditures associated with service demands of the new population. One is the expenditure demand caused by the need to expand the infrastructure before the new population is in place. As noted above, in this case expenditures grow before the increased population is present.

Even once the population increase is in place, the revenue and expenditure flows may grow in different patterns. Own-source revenues generally respond to increases in economic activity only after some lag, with the length of lag depending on state laws and other factors. For example, a new building or house is often not included in the tax rolls until it is completely constructed, and then the taxes may not be due for a year or more. For some properties, the construction process may be brief, but for others quite long. Ten years or more may be necessary to build a nuclear generating plant, two or three years to build a factory, and several months to build a house. Similarly, lags can enter into payment of many other taxes and charges. Yet, services must be provided to the workers and their families during the construction phase, and this group may be larger than the final population increase. After the construction phase, the revenue lag may persist for several years. So while revenues may balance with expenditure over time, there may be significant short-term problems. In very rapidly growing places, these timing problems can become particularly acute.

TABLE 1
COUNTY AREA EXPENDITURES BY SELECTED FUNCTIONS
FOR POPULATION SIZE GROUPS, 1976-77

Expenditures	Population Size Group					
	Less than 10,000	10,000- 49,999	50,000 to 99,999	100,000 to 249,999	250,000 to 999,999	1,000,000 or More
Education	359.99	319.55	330.52	349.67	361.23	392.45
Police	21.80	20.93	25.31	31.24	47.08	69.07
Fire	4.95	8.16	13.57	18.32	26.07	30.35
Sewerage	8.16	16.73	23.18	34.76	40.96	36.40
Recreation	4.80	6.63	10.27	14.43	23.36	28.82
Direct General	675.86	600.85	642.00	724.30	839.79	1,066.75
						802.20

SOURCE: U.S. Department of Commerce, Bureau of the Census, 1977 Census of Governments, Volume 4, Number 5 Compendium of Government Finance, August 1979, Table 52, p. 211.

Generally speaking, the tax revenues of residents are supplemented by business revenues to provide the desired level of local services. Residential tax revenues which increase when new people arrive must be supplemented by new business revenues to cover the expenditure demands of new citizens. The need for business revenues is even greater if new residents move into unoccupied housing rather than stimulate housing construction because little residential tax increase will occur. Fiscal problems are liable to be created if new businesses locate outside the municipal boundaries, while new population lives in the city. Revenues may also fall short of expenditure needs if tax concessions are granted or if substantial infrastructure commitments are made to attract industry. In these circumstances, the economic vitality of the area may be improved, but the local government's fiscal condition may be worsened. Much of the economic benefit may spread broadly around the area in which the industry locates, while the government expenditures are paid by the residents of one community. Local governments are rapidly becoming aware that promised spin-off benefits of new industry are slow in coming and each firm must be expected to pay its own way.

Federal aid has often been seen as a way to offset the fiscal crunch created by the different time paths of revenue and expenditure flows. After allowing for inflation, federal and state aid to local governments tripled between 1960 and 1979. Federal direct payments to local governments increased 30-fold over this time period. The population-change/federal-assistance-revenues-received relationship, however, is by no means obvious and will certainly not exhibit a high positive correlation. That is, rural governments will not necessarily receive large automatic increases in revenues simply because their population has grown. The conflicting effects of population characteristics within the formulas for aid programs means that federal aid does not always grow with population increases. Bryce tells the story of Portland, Oregon, which discovered a population undercount that was causing the city to lose revenue sharing funds.⁴ Yet, increasing its population statistic would cause the city to lose more Community Development Block Grant funds (which are channeled to lowest growth areas) than would be gained from revenue sharing. The existence of hold-harmless clauses, maximums and minimums, and other population-related factors in aid formulas (population density, rural population, and so forth) also prevent federal assistance from automatically meeting the increased needs of growing places. Thus, even in a period of bright prospects for federal aid, as in the recent past, federal programs could not be counted on to automatically assist rapidly growing places. In the current environment, state and local governments will need to be creative in finding ways to solve fiscal problems of population shifts.

I will mention, though, that the 1980 decennial census of population and housing will have an effect on receipt of federal assistance because of its frequent use in assistance programs, but measuring the precise impact requires information which may not be available for several years. In Table 2, it is shown that 14 different types of data from the census appear in 123 places in federal programs. These statistics are found in 69 programs, with \$78.4 billion obligated in fiscal year 1979, including the Lower Income Housing Assis-

4. Herrington, J. Bryce, "The Impact of the Undercount on State and Local Government Transfers," in U.S. Department of Commerce, Bureau of the Census, Conference on Census Undercount: Proceedings of the 1980 Conference, U.S. Government Printing Office, 1980.

TABLE 2

DECENNIAL CENSUS OF POPULATION AND HOUSING FACTORS AND FREQUENCY OF USE

	Number of Assistance Programs Using Factor
Total Population	20
Population by Age	11
Population by Race	1
Population Migration	6
Population Density	4
Urban Population	1
Rural Population	13
Urbanized Population	3
SMSA Population	1
Farm Population	4
Income	32
Land Area	14
Housing Conditions	12
Educational Attainment	1

SOURCE: Emery, et al., p. 81.

tance Program of the Department of Housing and Urban Development and the Comprehensive Employment and Training Act.⁵

Conclusions and Policy Recommendations

Growing areas are unlikely to realize reduced fiscal stress from their increased economic activity. Revenues from existing tax sources do rise, and some state and federal aid programs yield increased revenues, but demands for services for new businesses and residents will likely create expenditures that absorb all of the revenues. With the need to build infrastructure early in the growth process and the lags in receiving revenues, growing areas can experience substantial fiscal stress. Growing areas experience these problems mostly because of timing of revenue flows versus expenditure needs, and the problems may be minor in moderately growing places. Growth in the demand for services and the types of services demanded will also increase expenditure needs in many growing places. The solution is to provide loans to offset the short-term stress on the most impacted areas, those with the most rapid growth rates. It might be noted that declining areas experience their difficulties because of past infrastructure decisions and because remaining populations are often lower-income and older, requiring greater services. Declining places, therefore, may be in need of grants as a redistribution mechanism.

Existing federal programs, even those instituted before the New Federalism, cannot be relied upon to automatically provide revenues to offset the effects of population growth. Existing programs could be modified to target more funds to the rapidly changing areas, but this would dilute the ability of a program to accomplish its original intent. Rather than expect aggregate federal assistance to offset the effects of rapid change, a better approach would be to have programs specifically developed to deal with the most severely affected places and permit other federal programs to accomplish other objectives. Similarly, state aid programs, though they would need to be evaluated separately for each state, are unlikely to be pre-programmed to offset the imbalance between revenue and expenditure flows in rapidly growing places.

Carefully designed federal aid programs that meet the needs of the most rapidly growing places seem a practical solution to the revenue timing problems. The emphasis of the New Federalism program makes it very difficult to envision such aid. In fact, even in a different administration, this would be unlikely. The downturn in federal aid to state and local governments actually began during the Carter Administration when aid, after taking out the effect of inflation, peaked in 1978 and has declined since. The current administration can be expected to deal more with broad-based macro policies than the needs of individual distressed places; therefore, these needs are unlikely to be met here.

State governments can step in and provide loan or grant programs as needed. Again, this seems unlikely on the heels of the fiscal limitations fever of the late 1970's, given the currently sluggish economy and large reductions in federal aid to state governments. Even states with brighter fiscal climates may be unwilling, at least in the short run, to tax their slower-growing areas to provide fiscal relief for the more rapidly growing places, so prospects are slim for new direct aid from the states.

5. Emery et al., p. 80.

States can help local areas in several ways other than providing funds directly. Laws which shorten lags in the receipt of revenues represent one way. For example, state laws can be altered to permit property taxation on the basis of percentage of construction completed. State aid formulas which use population statistics can be adjusted to reflect changes more rapidly. For example, state school aid can be based on the current year's attendance rather than that of the preceding year. Formulas based on census population statistics can use population estimates to keep the formulas more realistic in distributing grant funds.

Self-help may be much more important in the coming decade. State and local governments will find it particularly important to avoid reducing the fiscal base through providing tax concessions in an effort to attract new economic activity.

New approaches to financing infrastructure may be appropriate. Assessments and connect charges that place the burden of new infrastructure on the new population, or at least new homes, rather than on the existing population, may become necessary. Charges of this type are already becoming frequent in California and have the advantage of insuring that the people moving into an area pay the costs of their location even if they choose to move out later. This can avoid a boom-type phenomenon where people move in and move back out, leaving the remaining population to pay for needed new infrastructure.

User charges for services of all types must be considered as a mechanism for funding more services in an era of growth. They insure that the people using the services pay for them. Also, they allow easier determination of the level of services demanded, a particularly important consideration when populations are changing. User charges grew rapidly as a nonmetro revenue source in the 1970's and this trend is likely to continue.

DECEMBER 1, 1982

AGRIBUSINESS IN THE 1980'S: EXPORTS OR EXCESSES?

JOSEPH D. COFFEY*

THE U.S. AGRICULTURAL SECTOR IS SUFFERING FROM THE DEEPEST AND LONGEST ECONOMIC SLUMP IN 50 YEARS. REALIZED NET FARM INCOME, ADJUSTED FOR INFLATION IN 1980, 1981 AND 1982 HAS BEEN LOWER THAN DURING THE GREAT DEPRESSION. ADMITTEDLY, THIS NET FARM INCOME IS SPREAD AMONG FEWER FARMERS, BUT EVEN ON A PER FARM BASIS IT IS THE LOWEST ON A SUSTAINED BASIS FOR OVER 2 DECADES. THE RETURN TO FARM EQUITY CAPITAL IS THE LOWEST IN 40 YEARS.

THE ECONOMIC ILLS OF FARMERS HAVE SPREAD TO THE MANUFACTURERS AND DISTRIBUTERS OF FARM INPUTS AND THE BUYERS AND HANDLERS OF FARM OUTPUTS. ALMOST EVERY ISSUE OF THE WALL STREET JOURNAL REPORTS CLOSINGS OF FERTILIZER PLANTS AND FARM SUPPLY STORES, DECLINES IF NOT NEGATIVE NET EARNINGS, SHOTGUN MERGERS TO SAVE FALLEN FIRMS, AND THE FINANCIAL WOES OF FARM MACHINERY MANUFACTURERS. ONLY THOSE IN THE GRAIN BIN BUSINESS SEEM TO BE PROSPERING.

IT IS TEMPTING TO SUCCUMB TO THE PRESENT GLOOM AND DOOM AND TO FORECAST MORE OF THE SAME. INDEED, THERE ARE SEVERAL REASONS FOR PESSIMISM. THE ANTICIPATED RECORD CARRY-OVER GRAIN STOCKS FOR 1983-84, THE SNAILS PACE OF THE ECONOMIC RECOVERY, THE HIGHLY COMPETITIVE AND TIGHTLY PROTECTIVE NATURE OF WORLD AGRICULTURAL

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MARKETS, THE SLOWING POPULATION GROWTH, AND THE ESCALATING BURDENS OF GOVERNMENT FARM PROGRAMS ALL POINT TOWARD A CONTINUED SQUEEZE ON FARM INCOME FOR AT LEAST ONE IF NOT TWO OR MORE YEARS. THUS THE SHORT-TERM OUTLOOK FOR FARMERS AND HENCE FOR AGRIBUSINESSES IS NOT BRIGHT.

WHAT ABOUT THE LONGER-TERM OUTLOOK FOR THE REMAINDER OF THE 1980's? IS IT ALSO ONE OF GLOOM AND DOOM OR IS THERE A BASIS FOR OPTIMISM? IN ATTEMPTING TO COME TO GRIPS WITH THE QUESTION OF WHERE IS AGRIBUSINESS HEADED, I WILL FIRST ASSESS WHERE THE FARM SECTOR IS COMING FROM. SECOND, I WILL REVIEW HOW AGRIBUSINESSES HAVE BEEN DOING. THIRD, I WILL FORECAST FARM CASH RECEIPTS AND FARM USE OF FEED, SEED, FERTILIZER, FUEL AND PESTICIDES ASSUMING A MODERATE 4% AND A BRISK 8% EXPORT GROWTH RATES. I WILL CLOSE WITH AN EXHORTATION TO AGRICULTURAL ECONOMISTS AND AGRICULTURAL LEADERS NOT SIMPLY TO ASSESS THE PAST AND FORECAST THE FUTURE, BUT TO CREATE THE FUTURE OF U.S. AGRICULTURE.

WHERE AGRICULTURE IS COMING FROM?

THE PAST TWO DECADES OF U.S. AGRICULTURE CAN BE SUBDIVIDED INTO THREE DISTINCT ERAS: 1965 TO 1971 AN ERA OF STEADY EXPANSION; 1972 TO 1979 AN ERA OF BOOM AND VOLATILITY, AND 1980 TO 1982 AN ERA OF SEVERE RECESSION. LET'S BRIEFLY EXAMINE THE FARM TRENDS FOR EACH OF THE THREE ERAS. (SEE TABLE 1.) IN ORDER TO REMOVE THE OVERALL INFLATION RATE, ALL DOLLARS IN TABLE 1 HAVE BEEN CONVERTED TO CONSTANT ("REAL") 1982 DOLLARS BY ADJUSTING WITH THE CONSUMER PRICE INDEX.

1965-1971: ERA OF STEADY EXPANSION:

THE 1965 TO 1971 ERA EVOLVED FROM THE BURDENSOME SURPLUSES OF THE EARLY 1960's. PRICES PAID AND RECEIVED BY FARMERS CREEPED UP 3% COMPARED TO A MODERATE 5% RISE IN THE CONSUMER PRICE INDEX. THE PRICES PAID FOR FERTILIZER ACTUALLY DECLINED AND THE PRICES PAID FOR FEED, PESTICIDES AND FUELS ROSE LESS THAN 2% PER YEAR. REAL CASH RECEIPTS ROSE 1% PER YEAR. REAL VALUE OF EXPORTS WERE STEADY. REAL EXPENDITURES ON CONSUMABLE INPUTS ROSE AT A BRISK 5% PER YEAR WHEREAS CROPLAND ACREAGE WAS CONSTANT. OVERALL, THIS WAS A RATHER TRANQUIL AGRICULTURAL ERA OF A TRANSITION FROM AN ERA OF SURPLUSES TO AN ERA OF SHORTAGES. AN ERA OF QUIET BEFORE THE BOOM.

1972-1979: ERA OF BOOM AND VOLATILITY:

THE SOVIET GRAIN DEAL USHERED IN AN ERA OF BOOM AND VOLATILITY IN AGRICULTURE. DEVALUATION OF THE DOLLAR, CROP FAILURES, OIL EMBARGOES, AND INFLATION PROMPTED A SERIES OF UNPRECEDENTED GOVERNMENT INTERVENTIONS IN AGRICULTURAL MARKETS DURING PEACETIME. GRAIN EXPORTS WERE EMBARGOED, FUEL WAS ALLOCATED, AND PRICE CEILINGS WERE CLAMPED ON FOOD. EARL BUTZ, THE IRREPRESSIBLE SECRETARY OF AGRICULTURE, GOT SWEEPED-UP IN THE EVENTS AND BEGAN PROPOUNDING "PLANTING FENCE-ROW-TO-FENCE-ROW" AND "FOOD POWER."

PRICES RECEIVED BY FARMERS GALLOPED UPWARD BY 13% PER YEAR - FASTER THAN THE 11% ANNUAL RISE IN THE CPI. PRICES PAID BY FARMERS SHOT UPWARD 15% PER YEAR. FARM FUEL PRICES ROSE 22% PER YEAR. SEED AND FERTILIZER PRICES ROSE 16% PER YEAR. REAL CASH RECEIPTS ROSE 3% PER YEAR. HALF OF THE INCREASE IN REAL CASH RECEIPTS WAS DUE TO THE DOUBLING OF AGRICULTURAL EXPORTS. NET CASH FARM INCOME INCREASED FROM AN AVERAGE OF \$45 BILLION DURING 1965-71 TO

\$55 BILLION DURING 1972-79.

THE RISE IN REAL NET CASH INCOME INDUCED FARMERS TO TRIPLE THE NOMINAL VALUE OF FARM LAND AND TO EXPAND CROP ACREAGE BY 46 MILLION ACRES. ALTHOUGH FARM OUTPUT AND CROPLAND ROSE FASTER IN 1972-79 THAN DURING 1965-71, REAL EXPENDITURES ON CONSUMABLE INPUTS ROSE MORE SLOWLY. APPARENTLY THE RAPID RISE IN CONSUMABLE INPUT PRICES INDUCED FARMERS TO PARTIALLY SUBSTITUTE LAND FOR CONSUMABLE INPUTS.

CLEARLY, THE YEARS 1972-1979 WERE VERY DIFFERENT FROM THOSE BEFORE OR SINCE. THE RECORDS ESTABLISHED FOR INCREASES IN EXPORTS, NET INCOME, LAND PRICES, AND CONSUMABLE INPUT EXPENDITURES WILL NOT BE ECLIPSED ANY TIME SOON.

1980-1982: RECESSION

THE BOOM THAT BEGAN WITH THE SOVIET GRAIN DEAL ENDED WITH PRESIDENT CARTER'S JANUARY 4, 1980 PARTIAL EMBARGO ON SOVIET GRAIN SHIPMENTS. SINCE 1980, EXPANDING PRODUCTION IN FACE OF SLUGGISH U.S. AND FOREIGN DEMAND RESULTED IN A SEVERELY DEPRESSED FARM ECONOMY. PRICES RECEIVED BY FARMERS STAGNATED WHILE THE CPI ROSE 9% PER YEAR AND PRICES PAID ROSE BY 5%. TOTAL REAL CASH RECEIPTS AVERAGED \$15 BILLION BELOW 1972-79. THIS DECLINE RESULTED FROM A DROP OF \$21 BILLION IN THE DOMESTIC MARKETINGS AND A \$6 BILLION INCREASE IN EXPORTS. REAL NET CASH INCOME AVERAGED \$35 BILLION IN THE 1980'S VS. \$55 BILLION IN 1972-79 AND \$45 BILLION IN 1965-71.

IN 1982, FOR THE FIRST TIME IN 13 YEARS, THE NOMINAL VALUE OF AGRICULTURAL EXPORTS DECLINED. FOR THE FIRST TIME IN 30 YEARS, FARM LAND VALUES SLUMPED RATHER THAN JUMPED. HOWEVER, CROPLAND

USED HAS BEEN MAINTAINED AT VERY HIGH LEVELS. IN FACT, THE 319 MILLION CROPLAND ACRES USED IN 1981 ECLIPSED THE PEAK ESTABLISHED DURING WORLD WAR II. WITH FARM LAND PRICES DECLINING AND CROPLAND USE PEAKING, THERE IS LITTLE MENTION OF THE FARM LAND SHORTAGE WE HEARD SO MUCH ABOUT JUST A COUPLE OF YEARS AGO.

LESSONS

THIS QUICK SYNOPSIS HIGHLIGHTS FOUR KEY LESSONS TO REMEMBER AS WE TURN TO ASSESS THE REST OF THE 1980's.

- (1) EXPORTS HAVE BECOME THE MAJOR DRIVING FORCE OF THE DEMAND FOR U.S. FARM PRODUCTION. IN 1965-71, ALL THE EXPANSION IN REAL CASH RECEIPTS CAME FROM THE DOMESTIC MARKET. IN 1972-79, 50% OF THE EXPANSION IN REAL CASH RECEIPTS CAME FROM EXPORTS. IN 1980-82, ALL THE EXPANSION IN CASH RECEIPTS CAME FROM EXPORTS.
- (2) CONTRARY TO THE WIDESPREAD PRONOUNCEMENTS IN THE 1970's, WE HAVE NOT ELIMINATED THE EXCESS CAPACITY OF U.S. AGRICULTURE AND ENTERED AN ERA OF SHORTAGES BROUGHT ABOUT BY INSATIABLE EXPORT MARKETS.
- (3) THE UPS AND DOWNS OF AGRICULTURE HAVE LARGELY SPRUNG FROM CHANGES IN GOVERNMENT POLICIES AND ECONOMIC CONDITIONS OUTSIDE THE AGRICULTURAL SECTOR AND INDEED OUTSIDE THE U.S. MANY OF THE MOST INFLUENTIAL CHANGES SUCH AS THE SOVIET GRAIN DEAL AND GRAIN EMBARGOES, DOUBLE DIGIT INFLATION, THE ENERGY CRISIS, ENVIRONMENTAL MOVEMENT, THE DOLLAR DEVALUATION, LIFTING OF THE BAMBOO CURTAIN, GREATER HEALTH AND DIET CONSCIOUSNESS WERE NOT ANTICIPATED BY THE MANY

DISTINGUISHED SPEAKERS WHO HAVE APPEARED AT
PREVIOUS AGRICULTURAL OUTLOOK CONFERENCES.

- (4) FARMERS RESPOND TO ECONOMIC INCENTIVES. THEY
HAVE A REMARKABLE ABILITY TO ADJUST THE MIX OF
COMMODITIES PRODUCED AND INPUTS USED. IF THE
PROPER ECONOMIC SIGNALS ARE TRANSMITTED, NO FARM
COMMODITY IS LIKELY TO BE IN PERPETUAL SURPLUS OR
PERPETUAL SHORTAGE. BUT ADJUSTMENT REQUIRES TIME
AND MAY BE THWARTED BY WEATHER AND OTHER RANDOM
EVENTS.

HOW'S AGRIBUSINESS BEEN DOING?

FARMER PURCHASES OF CONSUMABLE INPUTS:

FARMER EXPENDITURES ON THE MAJOR CONSUMABLE INPUTS - FEED, SEED, FERTILIZER, FUEL, AND PESTICIDES - EXPRESSED IN CONSTANT 1982 DOLLARS HAVE RISEN EACH SUCCESSIVE ERA, BUT THE AVERAGE RATE OF GROWTH HAS FALLEN. MOST DRAMATIC HAS BEEN THE REVERSAL OF PESTICIDE AND FERTILIZER EXPENDITURES WHICH GREW THE FASTEST DURING 1965-71, BUT DECLINED THE FASTEST DURING 1980-82.

PER DOLLAR OF CASH RECEIPTS, FARMER PURCHASES OF ALL THE CONSUMABLE INPUTS, EXCEPT FEED, HAS BEEN RISING. EXPENDITURES ON CONSUMABLE INPUTS HAVE RISEN FROM 25¢ PER DOLLAR OF CASH RECEIPTS IN 1965-71 TO 31¢ PER DOLLAR IN 1980-82. THE LONG-TERM INCREASE IN THE SHARE OF PURCHASED INPUTS AND DECLINE IN THE SHARE OF FARM PRODUCED INPUTS HAS CONTINUED DURING THE PAST TWO DECADES. BUT, THE PACE OF THIS SHIFT IS SLOWING. MOST FARMERS TODAY ALREADY USE CHEMICAL FERTILIZERS, PESTICIDES, FEED ADDITIVES, GASOLINE AND PROVEN SEED VARIETIES. FUTURE EXPANSION OF FARMER PURCHASES OF CONSUMABLE INPUTS WILL LARGELY ARISE FROM EXPANSION OF FARM PRODUCTION RATHER THAN EXPANSION OF THE SHARE OF FARMERS USING THEM.

RETURN TO EQUITY:

THE THOUSANDS OF AGRIBUSINESS FIRMS WHO MANUFACTURE AND DISTRIBUTE THE \$45 BILLION OF FEED, SEED, FERTILIZER, FUEL AND PESTICIDES SPAN THE INDUSTRIAL SPECTRUM FROM THE GLOBAL GIANTS DUPONT AND EXXON TO THE MOM AND POP GENERAL STORES. SALE OF FARM INPUTS IS THE SOLE BUSINESS OF SOME FIRMS AND A MINOR SIDELINE OF OTHERS. ABOUT 20% OF THE CONSUMABLE INPUTS ARE

DISTRIBUTED BY FARM COOPERATIVES AND 80% BY PRIVATELY OR PUBLICALLY HELD CORPORATIONS.

NO SINGLE AND CONSISTENT SET OF PROFITABILITY ESTIMATES FOR FARMER COOPS, PRIVATELY HELD CORPORATIONS, AND PUBLICALLY HELD CORPORATIONS EXIST. THE BEST AVAILABLE DATA ARE THE ROBERT MORRIS ASSOCIATES MEDIAN RETURNS BY STANDARD INDUSTRIAL CODE (SIC) FOR PUBLICALLY HELD CORPORATIONS, THE FORBES MAGAZINE MEDIAN RETURNS ON EQUITY FOR THE 1023 LARGEST U.S. PUBLIC COMPANIES AND THE ANNUAL REPORTS OF FARMER COOPERATIVES.

THE MEDIAN RETURNS TO EQUITY PUBLISHED BY ROBERT MORRIS ASSOCIATES FOR PUBLICALLY HELD CORPORATIONS ENGAGED IN FERTILIZER MANUFACTURING, RETAIL FARM SUPPLY AND FEED MANUFACTURING WERE 12% DURING 1966-71, ROSE TO 20% DURING 1972-79, AND DROPPED TO 15% DURING 1980-82 (TABLE 3). THE MEDIUM RETURNS TO EQUITY FOR ALL MANUFACTURING FIRMS AVERAGED ABOUT 19% DURING EACH OF THE 3 ERAS. THE AGRIBUSINESS RETURNS WERE ONE-THIRD LOWER THAN ALL MANUFACTURING COMPANIES DURING 1965-71 AND ONE-SIXTH LOWER DURING 1980-82. THEY WERE ABOUT THE SAME AS ALL MANUFACTURING RETURNS DURING 1972-79. AGRIBUSINESS RETURNS TO EQUITY WERE 150% ABOVE THE PRIME INTEREST RATE DURING 1972-79 AND 10% BELOW IT DURING 1980-82. THE FORBES DATA REVEAL SIMILAR TRENDS OF FAVORABLE AGRIBUSINESS RETURNS DURING THE 1970'S AND DEPRESSED RETURNS DURING THE 1980'S. A QUICK SURVEY OF THE ANNUAL REPORTS OF THE LARGER FARMER COOPERATIVES REVEALS SIMILAR TRENDS OF HIGH EARNINGS DURING THE 1970'S BOOM AND LOW EARNINGS OR LOSSES DURING THE 1980'S.

THE ANSWER TO THE QUESTION, "HOW'S AGRIBUSINESS DOING TODAY?", AS MIGHT BE EXPECTED, IS THAT AGRIBUSINESSES PROSPER WHEN FARMERS PROSPER AND SUFFER WHEN FARMERS SUFFER.

AGRIBUSINESS OUTLOOK

1990 PROJECTIONS:

AS ALREADY DEMONSTRATED, THE OUTLOOK FOR FIRMS SELLING FEED, SEED, FERTILIZER, FUEL, AND PESTICIDES TO FARMERS PARALLELS THAT OF FARMERS. THE FARM OUTLOOK IN TURN DEPENDS UPON THE GROWTH IN DEMAND FOR FARM PRODUCTS RELATIVE TO THE GROWTH IN SUPPLY.

LET'S FIRST BRIEFLY EXAMINE THE SUPPLY SIDE. THE RECORD OF THE PAST TWO DECADES SUGGESTS TO ME THAT U.S. FARMERS WILL BE ABLE TO EXPAND SUPPLY BY ABOUT 2% PER ANNUM WITHOUT ANY SIGNIFICANT INCREASE IN PRICES RECEIVED RELATIVE TO PRICES PAID. STATED DIFFERENTLY, I EXPECT A 2% ANNUAL RATE OF PRODUCTIVITY GROWTH IN AGRICULTURE. I WILL NOT DETAIL MY REASONING IN SUPPORT OF 2% PRODUCTIVITY GROWTH, BUT WILL SIMPLY NOTE THAT THIS IS ABOUT THE HISTORICAL TREND.

ON THE DEMAND SIDE, IT IS NECESSARY TO DISTINGUISH BETWEEN DOMESTIC MARKETS AND EXPORT MARKETS. DOMESTIC DEMAND IN THE REMAINDER OF THE 1980'S IS LIKELY TO EXPAND AT A MUCH SLOWER PACE THAN DURING THE PREVIOUS 3 DECADES. AVERAGE ANNUAL POPULATION GROWTH RATE HAS DROPPED FROM 1.7% IN THE 1950'S TO 1.3% IN THE 1960'S, TO .9% IN THE 1970'S AND EARLY 1980'S. PER CAPITA DOMESTIC DISAPPEARANCE OF FARM PRODUCTS IS NOT LIKELY TO INCREASE VERY RAPIDLY BECAUSE OF THE MODERATE GROWTH IN PER CAPITA INCOME, THE DECLINING INCOME ELASTICITY OF DEMAND, AND INCREASED DIETARY CONSCIOUSNESSES. CONSEQUENTLY, I EXPECT DOMESTIC DEMAND TO EXPAND ABOUT 1% PER YEAR IN THE 1980'S.

THE MAJOR QUESTION IS AT WHAT RATE WILL WE BE ABLE TO EXPAND AGRICULTURAL EXPORTS. I HAVE MADE PROJECTIONS OF CASH RECEIPTS AND EXPENDITURES ON CONSUMABLE INPUTS ASSUMING ANNUAL EXPORT GROWTH OF 4% AND 8%. (TABLE 4.) ALL VALUES HAVE BEEN PROJECTED IN TERMS OF CONSTANT 1982 DOLLARS THEREBY REMOVING THE EFFECTS OF INFLATION. THE 4% EXPORT GROWTH COMBINED WITH 1% DOMESTIC MARKET GROWTH RESULTS IN A 2% ANNUAL GROWTH IN CASH RECEIPTS. TOTAL REAL EXPENDITURES ON CONSUMABLE INPUTS, CORRESPONDING TO THE 2% CASH RECEIPT GROWTH, ARE PROJECTED TO INCREASE 4% PER YEAR. THE AMOUNTS OF THE VARIOUS CONSUMABLE INPUTS SOLD WOULD BE GREATER OR LESS THAN 4% DEPENDING UPON WHETHER THEIR RESPECTIVE PRICES INCREASED SLOWER OR FASTER THAN THE RATE OF INFLATION (CPI). MY GUESS IS THAT FOR THE REST OF THE 1980'S, PRICES PAID BY FARMERS WILL NOT INCREASE AS FAST AS INFLATION.

CASH RECEIPTS, ASSUMING AN 8% EXPORT GROWTH, ARE PROJECTED TO INCREASE 3% DURING THE REMAINDER OF THE 1980'S. THIS WOULD RESULT IN A 6% GROWTH IN REAL CASH EXPENDITURES ON CONSUMABLE INPUTS.

IF EXPORTS DO NOT GROW BY 4% OR MORE, I BELIEVE U.S. AGRICULTURE WILL EXPERIENCE CONTINUED NEED TO CONTROL PRODUCTION.

NEW TECHNOLOGIES:

THE PRECEEDING PROJECTIONS ARE PREDICATED UPON "BUSINESS AS USUAL." BUT, IF THE 1970'S HAVE TAUGHT US ANYTHING, IT IS TO EXPECT THE UNEXPECTED. I AM ESPECIALLY OPTIMISTIC ABOUT THE MANY EXCITING DEVELOPMENTS IN SCIENCE AND TECHNOLOGY. THE REVOLUTION THAT IS OCCURRING IN COMPUTERS, COMMUNICATIONS, GENETIC ENGINEERING,

AND MICROBIOLOGY WILL HAVE PROFOUND EFFECTS UPON FARMERS AND AGRIBUSINESSES. MY VIEW IS THAT THE PHYSICAL VOLUME OF INPUTS WILL BE REDUCED BY IMPROVEMENTS IN PRODUCTIVITY PER UNIT. THE KEY INPUT MAY BECOME INFORMATION.

SUMMARY

WE SHOULD NOT SIMPLY BE CONTENT TO FORECAST THE FUTURE OF U.S. AGRICULTURE. THE FUTURE IS NOT PREDESTINED, IT IS TO BE CREATED. WE SHOULD NOT WASTE AWAY OUR TIME READING TEA LEAVES. WE SHOULD ROLL UP OUR SLEEVES AND CREATE THE FUTURE WE WANT FOR AGRICULTURE.

LET ME HASTEN TO ADD THAT I AM NOT ADVOCATING THAT THE U.S. GOVERNMENT DEVELOP SOME GRANDIOSE 5-YEAR AGRICULTURAL PLAN AKIN TO THOSE IN THE SOVIET UNION. NOTHING COULD BE WORSE.

MANY OF TODAY'S AGRICULTURAL PROBLEMS STEM FROM SERIOUS MISTAKES IN PREVIOUS NATIONAL POLICIES AND ACTIONS. INDEED, U.S. GOVERNMENT INVOLVEMENT IN AGRICULTURE MAY BE AT AN ALL-TIME HIGH. PRICE SUPPORT PROGRAMS PRESENTLY APPLY TO ONE-HALF THE CROP OUTPUT AND TO ONE-FOURTH THE LIVESTOCK. GOVERNMENT STOCKS OF WHEAT, CORN, SOYBEANS, TOBACCO, AND MILK ARE AT OR NEAR RECORD LEVELS. THE USDA HOLDS MORE FARM REAL ESTATE DEBT THAN ALL COMMERCIAL BANKS AND MORE NON-REAL ESTATE DEBT THAN THE FARM CREDIT SYSTEM. GOVERNMENT EXPENDITURES ON FARM PROGRAMS ARE EXPECTED TO BREAK ALL PREVIOUS RECORDS.

BY CREATING THE FUTURE, I MEAN CREATING THE OVERALL POLICIES AND ENVIRONMENT WITHIN WHICH AGRICULTURE CAN FLOURISH. I AM DEEPLY CONCERNED THAT WE WILL BE TEMPTED TO CONTROL PRODUCTION AND THEREBY PRICE OURSELVES OUT OF THE INTERNATIONAL MARKET. I BELIEVE IT WILL BE DIFFICULT TO HAVE A VIABLE AND PROGRESSIVE AGRICULTURAL SECTOR UNLESS OUR EXPORT MARKETS EXPAND.

TABLE 1 PRICE INDEXES, FARM INCOME & EXPORTS 1965-1982

ITEM	UNITS	1965- 1971		1972- 1979		1980-1982		65-7/80-2	
		Average	%/yr	Average	%/yr	Average	%/yr		%/yr
INDEXES									
CP1	1967=100	106	4.56	167	10.51	270	8.91	11.83	
Prices paid	1967=100	103	2.95	104	15.11	291	4.71	13.02	
Price received	1967=100	105	2.55	188	13.26	249	0.41	9.71	
REAL FARM INCOME \$ = 1982									
Lives. cash receipt	\$ mil	72477	1.55	84606	1.58	74380	-6.18	0.31	
Crop cash receipt	\$ mil	53253	0.00	82508	6.38	78022	-7.14	2.94	
Gov+other receipt	\$ mil	10384	0.75	5290	-9.09	4492	39.79	-3.69	
Tot cash receipt	\$ mil	136114	0.36	172404	2.69	156894	-5.75	1.07	
Cash Expenditures	\$ mil	90909	1.67	117649	4.21	122162	-3.42	2.45	
Net Cash Income	\$ mil	45125	-0.71	54755	-0.27	34732	-12.76	-1.62	
REAL ASSETS \$ = 1982									
Real estate	\$ bil	487	1.06	643	8.37	795	-3.59	4.44	
Non-real estate	\$ bil	186	1.70	222	3.15	239	-4.69	2.11	
Total	\$ bil	673	1.23	865	6.88	1034	-3.85	3.80	
REAL EXPORTS	bil\$1982	18	-0.42	39	16.09	45	-8.28	8.07	
POPULATION	mil	201	1.20	217	1.02	230	0.88	1.13	
DOMESTIC RECPT/CAPITA	1982\$	543	-0.12	609	0.51	570	-6.85	-0.75	

TABLE 2. CONSUMABLE INPUT PRICES, EXPENDITURES, & AMOUNTS

ITEM	UNITS	1965-1971		1972-1979		1980-1982		65-7/80-2	
		Average	%/yr	Average	%/yr	Average	%/yr		%/yr
INDEXES									
GPI	1967=100	106	4.56	167	10.51	270	0.91		11.83
Feed	1967=100	99	1.37	176	13.21	228	-3.70		8.61
Seed	1967=100	106	4.00	228	15.98	346	9.39		16.53
Fert	1967=100	95	-1.24	165	15.50	256	4.53		10.14
Fuel	1967=100	101	1.53	180	22.22	412	6.05		21.19
Pestic	1967=100	99	0.34	109	6.52	175	9.38		5.10
EXPENDITURES									
Feed	mil \$	6694	6.98	13701	15.94	18674	-0.32		13.28
Seed	mil \$	357	6.15	2292	23.64	3769	9.68		26.19
Fertilizer	mil \$	2247	6.09	5974	24.80	9545	0.01		23.67
Fuel	mil \$	1665	1.65	3596	38.73	9899	7.41		30.11
Pesticides	mil \$	609	23.52	1980	17.66	3615	7.28		32.90
Total	mil \$	12470	6.85	27153	20.73	44502	2.58		19.53
INPUT AMT INDEX									
Feed	1967=100	104	5.17	117	1.42	124	3.65		2.66
Seed	1967=100	99	3.55	121	3.62	134	0.25		2.77
Fertilizer	1967=100	103	9.07	144	4.46	151	-4.14		5.37
Fuel	1967=100	99	0.11	117	6.46	130	1.21		2.15
Pesticides	1967=100	103	22.72	179	7.65	262	-1.76		15.82
Total	1967=100	101	5.25	118	1.84	117	-1.92		1.76
ANAL EXPENSES 1982 \$									
Feed	mil \$	18056	1.90	24060	3.13	20220	-7.83		0.56
Seed	mil \$	2341	2.82	3901	7.56	4060	0.66		5.18
Fertilizer	mil \$	6166	1.20	9607	8.23	10333	-7.55		4.33
Fuel	mil \$	4535	-2.29	6040	13.25	9596	-1.27		6.60
Pesticides	mil \$	2187	14.89	3403	4.12	3890	-1.38		7.67
Total	mil \$	34135	1.30	47019	5.33	48103	-5.37		2.82

TABLE 3 RETURN ON EQUITY OF AGRIBUSINESSES

ITEM	1966-71	1972-79	1980-82	1966-82
	average		% / yr	
Retail farm supply	11.67	19.03	16.37	15.96
Fertilizer manuf	12.32	23.00	13.57	17.56
Feed manuf	13.27	19.03	16.43	16.56
All manufacturing	17.14	18.46	18.87	17.28
PRIME RATE (%)	6.52	3.42	16.71	9.25

SOURCE. Robert Morris Associates

TABLE 4 PROJECTED 1990 CASH RECEIPTS & CONSUMABLE INPUTS

ITEM	UNIT	ACTUAL					PROJECTED				
		1986	1987	1988	1989	1990	1986	1987	1988	1989	1990-95
CASH RECEIPTS											
1987-1990		247	372	553	527	347	367	399	413	436	7,119
CASH RECEIPTS											
Domestic 31%	% BIL	123	107	113	114	115	117	118	119	120	1,163
Exports 77.84%	% BIL	93	96	106	106	106	106	106	106	106	9,551
Total 34%	% BIL	166	153	156	154	156	159	162	165	168	1,190
CONSUMABLE INPUTS											
1987-1990		19	19	19	19	19	19	19	19	19	1,335
Feed	% BIL	19	19	19	19	19	19	19	19	19	5,600
Seed	% BIL	19	19	19	19	19	19	19	19	19	4,960
Fertilizer	% BIL	19	19	19	19	19	19	19	19	19	7,750
Fuel	% BIL	19	19	19	19	19	19	19	19	19	8,550
Total	% BIL	19	19	19	19	19	19	19	19	19	4,336
CONSUMABLE INPUTS											
Feed	% BIL	19	19	19	19	19	19	19	19	19	2,770
Seed	% BIL	19	19	19	19	19	19	19	19	19	7,440
Fertilizer	% BIL	19	19	19	19	19	19	19	19	19	6,710
Fuel	% BIL	19	19	19	19	19	19	19	19	19	9,750
Total	% BIL	19	19	19	19	19	19	19	19	19	10,570
CONSUMABLE INPUTS											
Feed	% BIL	19	19	19	19	19	19	19	19	19	6,050
Seed	% BIL	19	19	19	19	19	19	19	19	19	9,490
Fertilizer	% BIL	19	19	19	19	19	19	19	19	19	3,280
Fuel	% BIL	19	19	19	19	19	19	19	19	19	2,700
Total	% BIL	19	19	19	19	19	19	19	19	19	5,160
CONSUMABLE INPUTS											
Feed	% BIL	19	19	19	19	19	19	19	19	19	5,820
Seed	% BIL	19	19	19	19	19	19	19	19	19	2,160



For Release: 1 December 1982

As with most suppliers of inputs, the agricultural equipment manufacturing industry is eagerly awaiting a return to more prosperous days for our nation's farmers.

Just how and when this will occur is the subject of a great deal of speculation. It can be said, however, that manufacturers believe a slow but firming trend in levels of equipment purchasing will take place over the next several months with a much stronger response in late 1983 and 1984.

Further declines in the cost of borrowed money, continued low levels of inflation and the fact that many farmers have pushed their equipment to the limit would suggest that any positive movement in commodity prices could cause equipment sales to increase. When farmers do start returning to their local dealerships in significant numbers, they will be much more selective in their purchases and will, no doubt, do considerable shopping around to take maximum advantage of price discounts and interest payment waivers. In a growing number of instances, they will lease rather than purchase major items.

Favorable to a possible upward movement in agricultural equipment sales is the fact that fully informed bankers will soon begin advising their farmer clients to make purchases in order to take advantage of price discounting which will disappear as dealer and manufacturer inventories are brought under control. Banker encouragement to buy could be especially prevalent where farmers have little or no debt, significant land equity and also have certificates of deposit maturing now.

Contributing to potential increased equipment purchases includes the recognition that a number of farmers currently are enjoying more financial success than they want their neighbors to know about. This is especially true where 1982 production was booked at prices far more favorable than current cash positions and where bumper yields are prevailing. A further factor which would support a firming trend in equipment demand is that more

acres of production are coming under the responsibility of highly skilled managers. These on-farm executives look at trading equipment in a total business decision-making process. This will lead to a more constant upgrading of the agricultural equipment used in the various enterprises ... even in marginally profitable circumstances.

While American agriculture today is dependent upon mechanization, there is a consensus developing which suggests that we may never again see the high numbers of total units sold as was experienced in 1973-74 and in 1979. As a matter of fact, much discussion is heard about using the "1982 lows" as a reference point for future sales comparison rather than historic highs of previous years. It is appropriate to note that 1982 unit sales could represent the lowest possible level of agricultural equipment purchases without beginning to seriously erode the productivity of America's farms and ranches.

What are the intermediate (three to eight years) consequences to agriculture as a result of the depressed level of sales and the loss of corporate profitability to equipment manufacturers?

In past years, as soon as new technology could be satisfactorily adapted to agricultural equipment it was made available because of the highly competitive business climate. The economic dislocations suffered by the industry may slow down the rate of new product introductions, because the capital resources to retool are not available, and the level of research and testing has decreased due to personnel and research funding cutbacks at the companies.

A second intermediate consequence could be a change in the way equipment is financed between time of manufacture and sale to the farmer customer. Traditional floor plans could become much shorter necessitating dealers to do more of the financing, or there will be far less equipment in stock from which a farmer may choose. The most probable result will be that equipment, especially major items, will not be manufactured until ordered by customers.

A third intermediate consequence will be a continuing consolidation of dealerships. Those remaining will be larger, financially stronger, with better facilities and personnel to service their area's farmers.

A fourth intermediate consequence, albeit of unknown impact, will be the fact that the industry is seeing the largest single exodus of trained, experienced agricultural equipment people that has ever occurred. Much of what might be called the "institutional memory" is being lost because of early retirement encouraged by companies as a cost saving measure and by the simple fact that the greatest number of these people were hired 25-35 years ago when the industry began its period of great growth.

While the real world demands we face head-on certain negative circumstances that currently prevail in the agricultural equipment manufacturing industry, the real world also demands that sight not be lost as to the great opportunities ahead. Even under these difficult times, equipment manufacturers still provide farmers the most modern, efficient and productive equipment found anywhere in the world. Even under trying circumstances, new technology is being researched, tested and incorporated at remarkable rates. Comparing advertising copy in farm magazines from a decade ago with products advertised today will reflect some measure of this fact.

New products for the new agriculture hold a great promise for the future. While it is not yet clear as to who will survive this period of economic transition as agricultural equipment manufacturers, more than likely there will continue to be excess manufacturing capacity for several years. This will keep the equipment manufacturing industry very competitive for the foreseeable future ... both home and abroad ... benefiting farmers and consumers alike!

11/12/82
FED/150/D10/P



FARM AND INDUSTRIAL EQUIPMENT INSTITUTE

410 NORTH MICHIGAN AVENUE • CHICAGO, ILLINOIS 60611 • 312/321-1470

EMMETT BARKER • PRESIDENT

To: Trade Press and Flash Report Subscribers

From: Ed Berzanski, Director of Statistics
(Contact: Rita Zimmer, Statistical Assistant)

Subject: October 1982 FED Flash Report

The Farm and Industrial Equipment Institute of Chicago, IL, today announced preliminary retail sales in units of the following equipment for the month of OCTOBER 1982. These data are as follows:

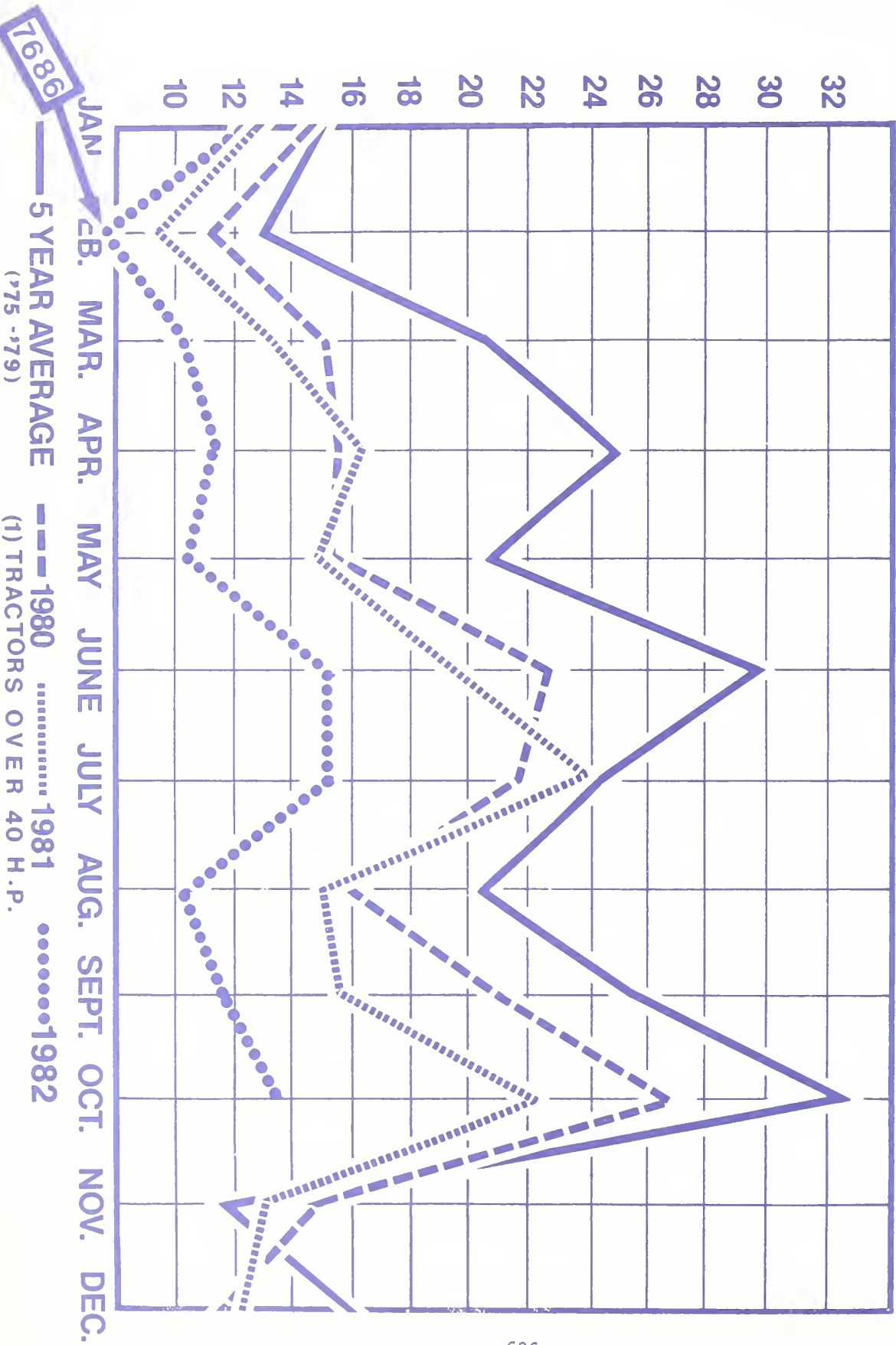
UNIT RETAIL SALES

	OCTOBER			JANUARY-OCTOBER		
	1982	1981	%	1982	1981	%
EQUIPMENT						
Farm Wheel Tractors:						
2-Wheel Drive 40 And Under 100 HP	4,005	4,793	-16.4%	36,007	44,023	-18.2%
2-Wheel Drive Over 100 HP	2,614	5,706	-54.2%	24,964	36,559	-31.7%
Total 2-Wheel Drive	6,619	10,499	-37.0%	60,971	80,582	-24.3%
4-Wheel Drive	623	880	-29.2%	5,695	8,018	-29.0%
TOTAL FARM WHEEL TRACTORS	7,242	11,379	-36.4%	66,666	88,600	-24.6%
Combines						
(Self-Propelled)	3,013	5,592	-46.1%	12,222	21,445	-43.0%
Balers						
(Bales under 200 lbs)	527	1,097	-52.0%	8,402	13,047	-35.6%
Forage Harvesters						
(Shear Bar Type)	868	1,266	-31.4%	4,586	6,523	-29.7%
Mower Conditioners	835	1,293	-35.4%	13,143	17,570	-25.2%

These data are, in part, estimates which are subject to revision when final detailed data become available. Because of the seasonal nature of the industry, comparisons of monthly data from one period to another should be done with extreme caution. These data represent most, but not all, of the manufacturers in each product category being sold at retail in the fifty states and The District of Columbia.

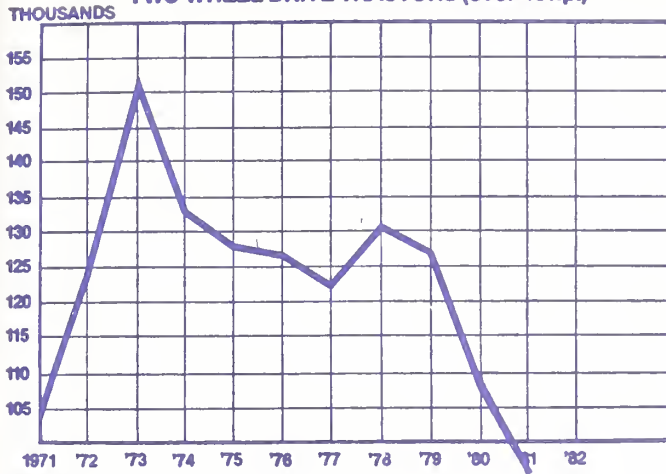
UNITS IN
THOUSANDS

TRACTORS,⁽¹⁾ COMBINES, BALERS, FORAGE HARVESTERS, MOWER CONDITIONERS, MANURE SPREADERS, WINDROWERS

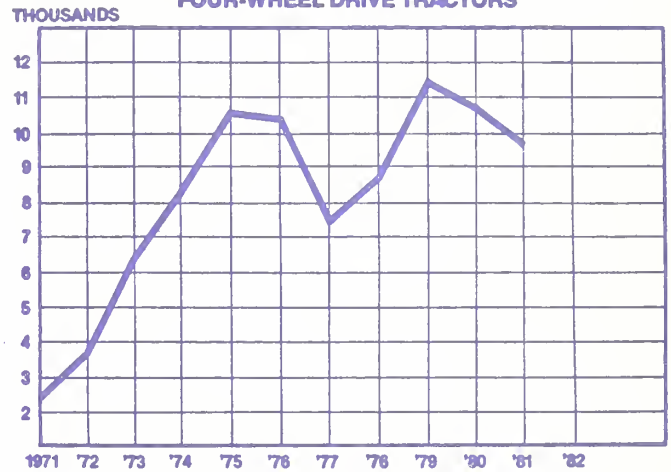




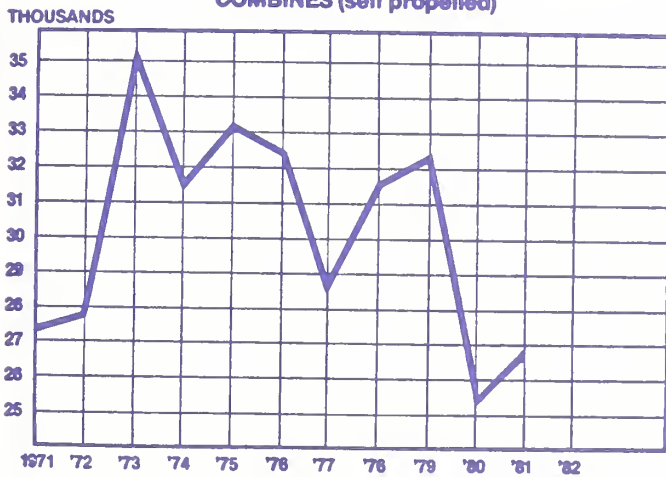
TWO-WHEEL DRIVE TRACTORS (over 40hp.)



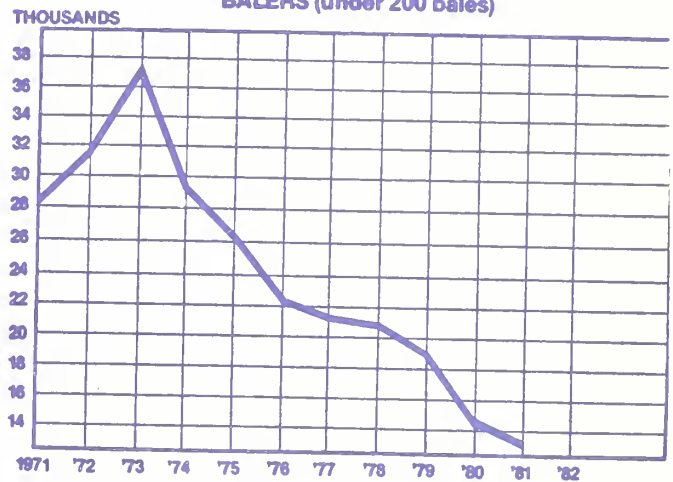
FOUR-WHEEL DRIVE TRACTORS



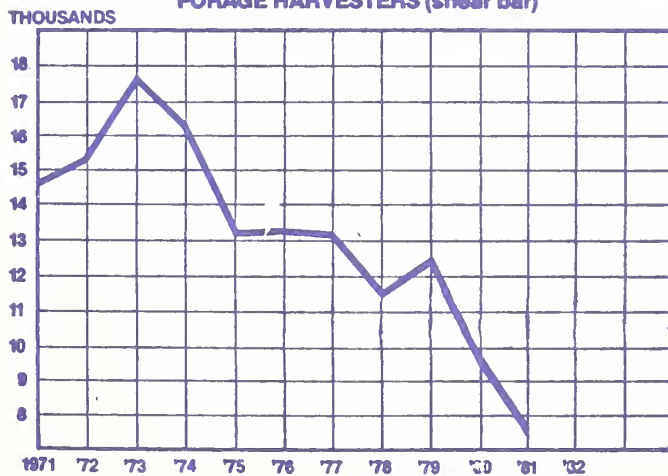
COMBINES (self propelled)



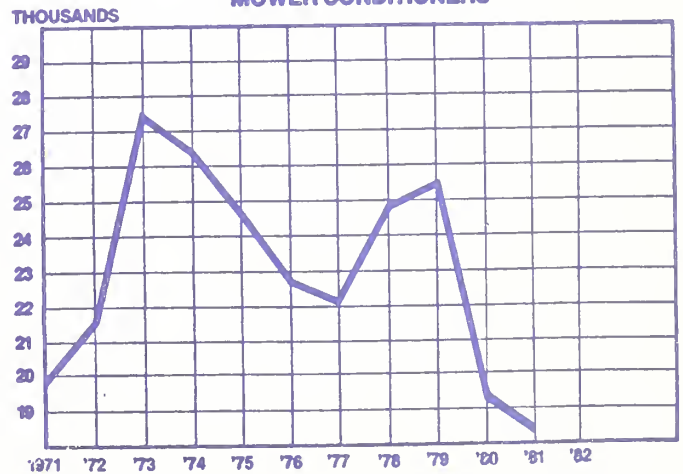
BALERS (under 200 bales)

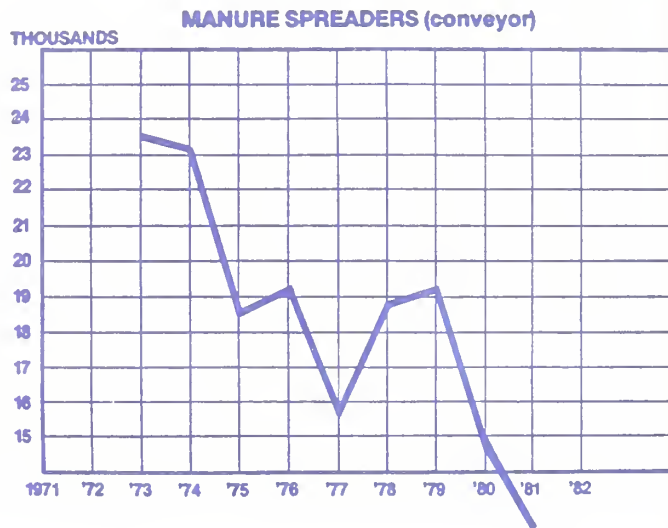
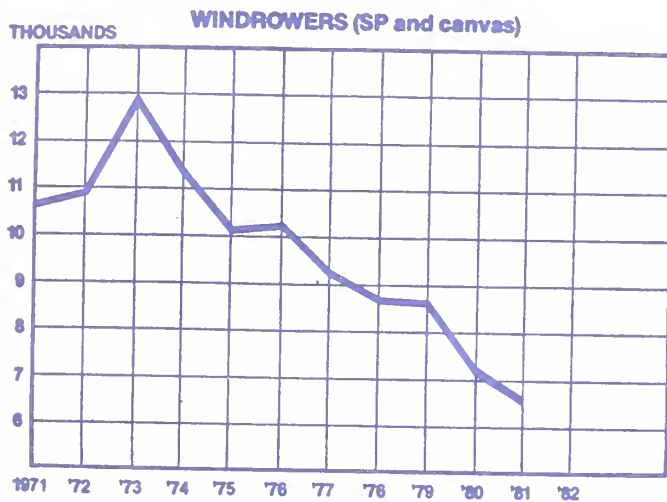


FORAGE HARVESTERS (shear bar)



MOWER CONDITIONERS





FARM AND INDUSTRIAL EQUIPMENT INSTITUTE

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EMMETT BARKER • PRESIDENT

Paul C. Westcott, Economic Research Service, USDA

1983 Agricultural Outlook Conference, Session #30
Washington, D.C.

For Release: Wednesday, December 1, 1982



Retail food prices this year have averaged about 4-1/2 percent higher than in 1981. This is the smallest annual increase in food prices since 1976. A number of factors have affected the food and agricultural sector and have contributed to the slowing of food prices. Record crop production and weak export demand have led to large domestic supplies of grains and soybeans which have pushed down livestock feeding costs and the farm value of cereals, bakery products, and vegetable oils. The price support for dairy products has been unchanged this year leading to the smallest retail dairy products price rise since 1972. A lower general inflation rate has held down food marketing costs. Stagnant real disposable incomes have limited consumer food demand. These factors have had and will continue to have important roles in limiting food price rises.

Today I will discuss the current food situation and the outlook for 1983. First, food price trends since the end of the 1970s will be reviewed with implications for the 1983 price outlook given. Then the role of food marketing costs in recent food price moderation will be discussed. We will then look at the situation and outlook for prices of individual food categories, followed by a discussion of the per capita food consumption outlook.

Recent Trends in Food Prices

Food price rises have trended downward for the last three years. Following double digit increases in 1978 and 1979, food prices have risen at successively lower rates in each year since. This year's food price rise of about 4-1/2 percent will be the smallest annual increase since 1976. It will also mark the seventh of the last eight years that food prices have risen less than the general inflation rate.

Table 1--Food Price Indicators

Consumer price index category	Change from previous year				
	1979	1980	1981	1982 P	1983 f
	<u>Percent</u>				
Food	10.9	8.6	7.9	4-1/2	3 - 6
Food away from home	11.2	9.9	9.0	5-1/2	4 - 6
Food at home	10.8	8.0	7.3	4	3 - 6

p = preliminary. f = forecast.

Prices for both food at home and food away from home have slowed in recent years. Grocery store food prices for food consumed "at home" have slowed from nearly an 11 percent increase in 1979 to about a 4 percent rise this year. Prices for food eaten away from home in restaurants, cafeterias, and fast-food establishments rose over 11 percent in 1979, about double this year's 5-1/2 percent rise.

Moderate food price changes are expected in 1983 in both the "at home" and the "away from home" markets. This reflects record wheat, corn, and soybean crops harvested this year, larger production of fruits and vegetables, slow recovery of consumer food demand and agricultural export demand, and a lower general inflation rate. Grocery store food prices are likely to rise 3 to 6 percent next year while prices for food away from home are expected to be up 4 to 6 percent. These increases imply an overall rise of 3 to 6 percent in food prices in 1983.

Within this range, the current assessment indicates a food price increase of about 4 percent for 1983. Conditions which would push food price increases towards the upper end of the forecast range would be poor weather, stronger export demand for agricultural commodities and consumer demand for food, and larger increases in food marketing costs. In contrast, very good weather, weaker agricultural export demand and consumer food demand, and lower-than-expected marketing cost increases would hold food price rises near the bottom of the forecast range next year.

Looking at the U.S. Department of Agriculture's market basket statistics, the underlying causes of the food price moderation can be seen. The retail cost of the market basket represents prices for domestically produced foods sold in grocery stores and consists of two components--the farm value of foods and the farm-to-retail price spread. These data account for about 82 percent of food at home.

First, the farm value of foods--accounting for slightly over a third of the retail cost of the market basket--has risen slowly for 3 years and is expected to again show only a small increase in 1983. This largely reflects weak domestic demand for food and export demand for agricultural commodities, with only slight improvement in demand expected in 1983.

Table 2--Market Basket Statistics

Category	Relative weight	Change from previous year				
		1979	1980	1981	1982 P	1983 f
<hr/>						
		<u>Percent</u>				
Retail cost	100	11.7	7.2	7.7	4	3 - 6
Farm value	35	10.7	5.5	2.8	2	1 - 4
Farm-to-retail price spread	65	12.3	8.3	10.5	5	4 - 7

p = preliminary. f = forecast.

Second, the farm-to-retail price spread--representing the charges for marketing food--has risen significantly less since 1979, especially this year. Continued moderation in the spread is expected in 1983. This is especially important for food prices because of the relatively large weight (about 65 percent) that the spread has in determining retail food prices.

Food Marketing Costs

The sharp decline in the rate of increase of the farm-to-retail price spread this year reflects significant moderation in food marketing costs. These costs have risen about 5 percent this year, down from an 11 percent rise in 1981. This decrease in food marketing costs parallels the decline in the general rate of inflation which has fallen from 10.4 percent in 1981 to about 6-1/2 percent this year. With the general inflation rate expected to slow some next year, food marketing cost increases will remain moderate. Four major factors--labor, packaging, energy, and transportation--account for over three-fourths of all food marketing costs.

Table 3--Major Food Marketing Costs

Category	<u>Change from previous year</u>		
	1981	1982 P	1983 f
		<u>Percent</u>	
Food marketing costs	11	5	4 - 7
Labor	10	7	5 - 7
Manufacturing	9	7	4 - 6
Wholesaling	9	8	6 - 8
Retailing	11	6	5 - 7
Packaging	7	-2	2 - 5
Paperboard and paper products	9	0	2 - 5
Polyethylene resin	2	-25	3 - 6
Tin cans	5	4	1 - 4
Glass containers	12	8	4 - 7
Fuel and power	19	5	8 - 12
Electricity	14	11	7 - 10
Diesel and fuel oil	24	-5	5 - 8
Natural gas	14	19	15 - 25
Coal	6	8	6 - 9
Rail transportation rates	16	7	3 - 6

p = preliminary. f = forecast.

Labor

Labor costs represent wages and benefits paid to workers in the food industry and account for nearly half of all food marketing costs. They have risen about 7 percent this year, down from a 10 percent increase in 1981. Labor costs have risen more slowly at each major marketing stage--manufacturing, wholesaling, retailing--with the greatest moderation occurring at retail.

Several factors contributed to this slowdown in labor costs. The minimum wage did not increase this year. Also, the lower inflation rate has reduced cost-of-living increases in wages, especially important for food retailing costs. But even more importantly, smaller wage and benefit increases have been negotiated in many new labor contracts this year. Because of the recession and high unemployment, workers have made concessions to protect jobs, especially in industries with financial difficulties. For example, in the meatpacking industry, workers for five major pork processing companies agreed to contracts that essentially freeze wages and eliminate cost-of-living adjustments until the fall of 1984. In exchange, the meatpackers gave assurances that no plants would be closed through the middle of 1983.

In the California food canning industry, a recent 3-year agreement holds wages unchanged in the first year of the contract, followed by 10 to 55 cents per hour wage increases in each of the following 2 years. These deferred wage adjustments represent 3 to 9 percent increases over the length of the contract, significantly less than the 21 to 27 percent first-year plus deferred wage adjustments in the previous contract. A further easing in labor costs results from changes in the probationary period for new workers. Employees will now be paid 2 dollars per hour less for their initial 90 days of work. This compares to a 30 cents per hour lower wage paid for the first 30 days of employment under the previous agreement.

Employees of some food retailers have also agreed to smaller wage and benefit increases in new labor contracts negotiated this year. A new contract covering food chain employees in St. Louis granted journeyman clerks a first year wage increase of 50 cents per hour or about 5.1 percent. This will be followed by additional 50 cent wage increases each of the remaining 2 years of the contract. In another contract settlement, clerks in Denver agreed to a wage increase of about 6.9 percent. Importantly, these increases are less than the 8 to 11 percent wage increases common in recent years.

Food industry labor costs in 1983 will probably slow further, with a 5 to 7 percent rise likely. Again the minimum wage will be unchanged in the coming year and cost-of-living adjustments will be limited by a moderate general inflation rate. Most scheduled wage and benefit increases next year from existing contracts will be smaller than this year. Continued weakness also is expected in many labor contract negotiations next year.

Packaging

Packaging costs in the food sector have gone down about 2 percent this year. Prices for polyethylene resin, the major material used in plastic containers and film wrapping, have dropped about a fourth, reflecting weak demand for plastics in nonfood markets due to the recession, and lower costs for petroleum inputs used in making plastics. Prices for paperboard and

paper products have been stable this year, due in part to weak market demand and large supplies of pulpwood, the major input in paperboard manufacturing. Prices of tin cans and glass containers have gone up less than a year ago, reflecting strong competition in the container industry. Glass container prices rose the most this year, due primarily to rising industry labor costs and cost increases for natural gas, the primary energy input in glass manufacturing.

Packaging costs may increase 2 to 5 percent in 1983. Polyethylene resin prices may be up some next year because petroleum prices will likely be higher. Prices for paperboard and paper products are expected to be somewhat higher than this year's level and container industry competition will continue to hold down tin can and glass bottle prices. For glass bottles, a new labor contract will be negotiated in 1983 which will likely lead to smaller cost rises, but costs for natural gas will continue upward and be partly offsetting.

Energy

Energy costs have risen about 5 percent this year, about a quarter the rate they did in 1981. Most of this slowdown reflects a 5 percent decline in diesel and fuel oil prices. Demand has been down reflecting slow economic growth and continued price-induced conservation efforts. Additionally, petroleum product inventories have been reduced, in part due to continued high interest costs. In contrast, coal prices have risen at a faster rate than a year ago. This reflects larger export demand for coal as an alternative to petroleum products and higher labor costs in mining resulting from last year's contract settlement in the industry. Higher coal prices and high costs of financing have further boosted electricity rates. Natural gas prices also have continued to increase at a substantial rate, largely as a result of decontrol.

Energy costs will likely rise more rapidly in 1983. Demand for diesel and fuel oil will still be weak through at least the middle of the year, but prices will likely rise slightly as petroleum product inventories begin to rebuild. Prices for other energy inputs will continue to be affected by the same factors as this year. Prices for coal and electricity will rise slightly faster than inflation. Phased decontrol will again push natural gas prices up sharply, with a 15 to 25 percent rise likely.

Transportation

Rail rates for food products this year have increased less than half as fast as in 1981. Rail rate increases are approved by the Interstate Commerce Commission (ICC) to reflect increased operating costs. Operating costs, however, have risen more slowly this year largely due to lower diesel fuel costs. In 1983, energy cost will likely be up more than this year, but labor costs probably will not be up as much. This will likely result in a lower rate of increase for rail costs and, consequently, ICC approved rail rate increases in 1983.

Trucking costs have been up somewhat less than rail rates this year. Increases for most transported goods generally parallel rail increases. However, increased competition resulting from decontrol of the industry in 1980 has led to lower trucking transportation rates for some foods. In 1983, trucking rate increases will likely be up near the 3 to 6 percent increase expected for rail rates.

Food Product Highlights

Prices for most foods rose moderately or declined this year. However, reduced production led to double digit price increases for pork and fresh fruit. Next year, small price rises are expected for most foods with declines likely for some categories.

Meats

Retail prices of red meat rose about 5 percent this year as production fell 5 percent. Most of this is a consequence of significant adjustments in the hog industry. Following two years of financial losses, hog producers cut production back 11 percent this year, with fourth quarter production down about 18 percent from year-earlier levels. Consequently, pork prices rose sharply through most of 1982 and have averaged about 12 percent higher than in 1981. Beef production this year will be up slightly from last year's level, with retail prices rising 2 percent. Production was down in the first half of the year, but has risen in the second half due to increased fed beef and cow slaughter. Importantly, higher cow slaughter implies that cattle

Table 4--Changes in Consumer Price Indexes 1980 through 1983

Food category	1980	1981	1982 P	1983 f
			<u>Percent</u>	
All food	8.6	7.9	4-1/2	3 - 6
Food away from home	9.9	9.0	5-1/2	4 - 6
Food at home	8.0	7.3	4	3 - 6
Meats	2.9	3.6	5	3 - 6
Beef and veal	5.7	0.9	2	2 - 5
Pork	-3.4	9.3	12	4 - 7
Poultry	5.1	4.1	-2	2 - 5
Eggs	-1.8	8.3	-3	-3 - 0
Dairy products	9.8	7.1	2	2 - 5
Fish and seafood	9.2	8.3	4	2 - 5
Fruits and vegetables	7.3	12.0	6	1 - 4
Sugar and sweets	22.9	7.9	0	3 - 6
Cereals and bakery products	11.9	10.0	5	2 - 5
Fats and oils	6.6	10.7	-2	2 - 5
Nonalcoholic beverages	10.6	4.2	3	3 - 6
Other prepared foods	10.8	10.3	6	3 - 6

p = preliminary. f = forecast.

Source: Historical data from Department of Labor; forecasts by Economic Research Service, U.S. Department of Agriculture.

producers may be delaying the expansion phase of the cattle cycle. With consumer incomes and food demand stagnant for a number of years, the derived demand for cattle has been weak, causing financial difficulties for many producers.

Further cutbacks in meat production of 1 to 2 percent are expected in 1983, pushing retail meat prices up 3 to 6 percent. Developments in the general economy and its implications for consumer incomes and food demand will be important for determining meat price increases next year. Also, developments in the hog industry will again have a strong influence on prices. With the hog to corn price ratio exceeding 25 in recent months, some expansion in hog herds would usually be occurring now, resulting in pork production increases by the middle of 1983. However, many hog producers have cash flow difficulties and, consequently, are reluctant to expand herds. Therefore, pork production may be off 3 percent in 1983, with retail pork prices likely to rise more than the general inflation rate. Beef production in 1983 may be down 1 percent, with retail beef and veal prices expected to be up somewhat more than in 1982.

Poultry and Eggs

Poultry prices have fallen about 2 percent this year, mainly due to continued increases in broiler supplies. Broiler production has been up about 2 percent and export demand has been weak. In addition, large frozen stocks of turkey at the beginning of the year augmented reduced production, holding retail turkey prices lower than a year ago for most of 1982. Egg prices have fallen about 3 percent this year. Lagging export demand has kept supplies near last year's levels even though production has been down about 1 percent.

In 1983, poultry production will likely be up again with low grain prices holding down feeding costs. With lower red meat supplies, however, poultry demand may rise some, pushing retail poultry prices up 2 to 5 percent. Egg production next year is expected to be near 1982's level, but weak foreign demand may hold prices lower than this year.

Dairy Products

Retail prices for dairy products will be up about 2 percent this year, the smallest annual increase since 1972. Changes in dairy legislation have kept the price support at \$13.10 per hundredweight this year. Also, marketing cost increases have been significantly smaller than in recent years. Additionally, milk production has continued to expand. Lower grain prices have reduced feeding costs and the resulting increase in feed use has raised output per cow. Further, low farm-level prices for cull cows have discouraged net dairy herd liquidation.

In 1983, the price support will be unchanged and marketing cost increases are likely to remain moderate. Milk production may rise further in 1983, even though deductions will be made from producer prices to help offset public costs of the price support program. Consequently, retail prices for dairy products in 1983 will likely be up less than the inflation rate again, and may rise as little as they have this year.

Fish and Seafood

Retail prices for fish and seafood this year have averaged about 4 percent higher than in 1981. Fresh and frozen fish prices were up sharply early in the year as cold weather reduced the catch. As weather improved, fish supplies recovered, resulting in a significant decline in fish prices in May. With marketing costs up moderately and competition from beef and poultry, fish prices recently have been about 2 percent higher than year-earlier levels. Moderate increases are expected for fish prices next year, although poor winter weather could again limit supplies and push prices up sharply early in 1983.

Fruits and Vegetables

Fruit and vegetable prices this year have averaged about 6 percent above last year. For the second consecutive year, a freeze in Florida reduced supplies and pushed fruit and vegetable prices up early in the year.

In addition to smaller planted acreage nationwide last winter, tomato, green bean, green pepper, and cucumber crops were reduced by the Florida freeze. At the same time, insect damage and smaller planted acreage reduced the California lettuce crop. Imports from Mexico augmented reduced domestic production, but retail fresh vegetable prices rose 24 percent between the last quarter of 1981 and the first quarter of 1982. By the second quarter, Florida fresh vegetable crops that had been planted following the freeze were being harvested. California lettuce production also rebounded in the second quarter. Seasonal production increases then pushed retail vegetable prices down in the third quarter. Potato prices, in particular, fell sharply at retail and have recently been 16 percent lower than a year ago. This reflects a 4 percent rise in the fall potato harvest, bringing production to the highest level since 1978. Also, fall harvest acreage is up 6 percent for 7 other major fresh vegetables, which has pushed retail prices lower than a year ago.

Retail prices for processed vegetables this year will average about 6 percent higher than in 1981. In the first half of 1982, processed vegetable supplies were below year-earlier levels, primarily reflecting lower contracted acreage last fall. Additionally, last year's yields for tomatoes used for canning were reduced by hot weather in California. Demand, however, has been weak and with processed supplies rising this fall due to an increase in contracted acreage, processed vegetable prices have recently been only 3 percent higher than a year ago.

Fresh fruit prices will average about 12 percent above 1981 levels as production difficulties affected citrus and noncitrus supplies this year. Last fall's apple harvest was down, especially in the Northeast and Great Lakes regions where cold weather in the spring of 1981 affected the crops. Consequently, apple stocks in cold storage at the start of this year were down 18 percent, and retail apple prices have been well above last year's levels. Orange production was down sharply this year and retail prices have also been considerably higher than in 1981. The California orange crop was

down a third and much of the fresh-use Florida crop was diverted to processing following the freeze. Peach production this summer was down 20 percent mainly due to cold weather last April in the Southeast. Also, bad weather in California last spring damaged the summer noncitrus crops.

The Florida freeze cut production of frozen concentrated orange juice (FCOJ) by reducing both the number of boxes of oranges harvested and the juice content of the fruit. Large FCOJ carryover stocks and imports from Brazil were partly offsetting although retail prices for FCOJ were up 10 percent from December of last year to March of this year. Demand for most other processed fruits has been sluggish this year and supplies have been adequate. Therefore, with marketing cost increases small, little change in retail prices for processed fruits has occurred since the first quarter. However, because of the freeze-related price jump early in the year, processed fruit prices will average 6 percent above 1981's level.

Fruit and vegetable prices next year are expected to be up slightly, 1 to 4 percent. A 4 percent rise in potato production this fall and a substantial increase in contracted vegetable acreage for processing will limit movements in retail vegetable prices. Processed tomato production is expected to be up 32 percent and processed corn production is expected to rise 12 percent. A 9 percent rise in apple production this fall, 27 percent greater grape production, and a projected 21 percent increase in orange production will likely push fresh fruit prices down. Pear prices will be up, however, reflecting a 12 percent smaller crop this year. Larger Florida orange production for processing will hold down FCOJ prices. Most of the orange trees in Florida have recovered from last winter's freeze damage as moisture conditions in the spring and summer were ample. Also, although production of fruit for canning is down, carryover supplies are large. This will keep canned fruit supplies adequate to meet lagging demand and will likely hold retail price increases for processed fruits lower than the general inflation rate.

Sugar and Sweets

Retail prices for sugar and sweets have averaged near 1981 levels. Global production of sugar last year exceeded consumption by about 10 million tons, bringing world sugar stocks to nearly 40 percent of annual consumption needs. Consequently, 1982 world raw sugar prices fell sharply. Domestically, however, a sugar price support program was enacted and duties, fees, and quotas have been placed on sugar imports. This has insulated retail sugar prices from much of the impact of the lower world sugar prices, holding retail prices for sugar stable through most of the year when they likely would have otherwise fallen. Consequently, although 1982 prices for sugar and sweets at retail are near 1981 levels, they are higher than they would have been without a sugar price support program and sugar import restrictions.

Global production of sugar this year is again likely to exceed consumption, so world raw sugar prices in 1983 will continue to be low. Domestically, an increase in the sugar price support and continued sugar import restrictions will contribute to a rise in retail prices for sugar and sweets of about 3 to 6 percent.

Cereals and Bakery Products

Price rises for cereals and bakery products this year have been held down primarily by moderation of food marketing costs. Cereals and bakery products are highly processed foods and, therefore, marketing costs play the dominant role (over 85 percent) in determining their prices. Additionally, both wheat and rice production in 1981 were record high and a larger wheat crop has been harvested this year. Consequently, the value of farm commodities used in cereals and bakery products has fallen this year, further limiting retail price rises.

The marketing cost moderation is expected to again hold down price increases for cereals and bakery products in 1983. Also, little change is expected in the farm value of these foods. Wheat supplies are high reflecting the second consecutive year of record-large production this year. Although rice production is down from 1981's record level, it is the second highest ever. Combined with large carryover stocks of rice from last year, this will push total rice supplies for 1983 to record high levels.

Fats and Oils

Retail prices for fats and oils have fallen 2 percent this year. Large supplies of oilseeds have limited price movements for vegetable oils. Record high 1981 peanut production has led to a recovery in supplies from the depressed levels caused by the 1980 drought. Marketing costs, which account for about three-fourths of retail prices for fats and oils, have also slowed.

Retail prices for fats and oils may increase 2 to 5 percent in 1983. Record large soybean production this year will again hold down prices for vegetable oils, but a decline in peanut production this fall will likely exert upward pressure on peanut and peanut butter prices next year. Marketing costs will again rise slowly.

Nonalcoholic Beverages

Nonalcoholic beverage prices have been about 3 percent higher this year. Soft drink price rises have slowed due to lower sugar prices, increased use of corn sweeteners, and smaller increases in marketing costs. Coffee prices rose sharply in January and February but have been stable since. Global coffee production last year was record large but a freeze in Brazil diminished expectations for 1982 production, leading to the early-year price run-up.

Next year, nonalcoholic beverage prices will again be up moderately, primarily due to small increases in marketing costs. Higher domestic sugar prices will also contribute to soft drink price rises. Coffee prices are likely to remain relatively stable in 1983. Global coffee production this year was down 16 percent, reflecting a 46 percent drop in the Brazilian crop that resulted from freeze damage to the coffee trees in 1981. However, carryover stocks from the record 1981 crop will hold world supplies for 1983 near this year's level. Further, no freeze occurred this year in coffee producing areas, so 1983 production will likely improve.

Food Consumption Situation and Outlook

Per capita food consumption this year on a retail weight basis will be down slightly from 1981's level even though real food prices will fall for the fourth consecutive year. This indicates the weakness in consumer food demand that has resulted from 3 to 4 years of little or no growth in real incomes. Per capita food use in 1983 is expected to rise some. Large crops this year and expected increases in fruit and vegetable supplies next year will offset a further drop in animal products use.

Consumption of animal product foods will be down about 1 percent this year, with an additional 1 to 2 percent decline likely in 1983. This year's decrease has been led by a 5 percent drop in red meat use. At 149 pounds per person, red meat consumption is the lowest since 1965, well below the record of 170 pounds per person in 1971. Most of this year's decline is due to the sharp fall in pork use. Beef and veal consumption is unchanged as population growth has offset a small rise in beef production. Next year, red meat use will be down again, with beef and pork consumption each expected to fall.

Table 5--Food Consumption, Retail Weight, 1980-1983

Food category	1980	1981	1982 p	1983 f
<u>Pounds per person</u>				
Total food	1407	1400	1393	1405
Animal products	587	582	577	571
Red meats	160	157	149	144
Beef and veal	78	79	79	77
Pork	68	65	57	55
Other	13	13	13	13
Poultry	61	63	64	65
Eggs	35	34	34	33
Dairy products	308	304	306	305
Other	24	24	24	24
Crop products	820	818	816	834
Cereals and bakery products	150	151	151	153
Vegetable oils	47	48	49	49
Fruits and melons	162	165	159	163
Vegetables	294	284	287	296
Sugar and sweeteners	133	135	135	138
Other	33	34	35	35

p = preliminary. f = forecast. Note: Totals may not add due to rounding.

Poultry consumption this year has continued its long term upward trend reflecting a 30 to 40 year expansion of the broiler industry. Importantly, with pork use down sharply, poultry consumption per person will exceed pork use this year for the first time ever. With further expansion likely in the broiler industry next year, the relationship of poultry use exceeding pork use is expected to continue in 1983. This shift is a consequence of the low price of poultry relative to pork, mainly reflecting the higher feed conversion ratio of poultry. Also, the biological production process for poultry is relatively short compared to pork and beef. This allows poultry producers to react faster to changing market conditions, thereby giving them a competitive cost advantage in the short run.

Regarding other animal product foods, egg use, although leveling off this year, will continue its long term downward trend in 1983, the result of dietary concerns and competition from other breakfast foods. Dairy products use is up this year, temporarily reversing a long term decline. Fluid milk use is down again but the distribution of cheese and butter from Government stocks has pushed processed dairy products consumption up. In 1983, per capita consumption of dairy products will decline, with use of fluid milk and processed dairy products each down slightly.

Per capita consumption of crop product foods this year will be near last year's level. Lower consumption of most fruits is being offset by larger consumption of potatoes and corn sweeteners. Next year consumption of crop product foods will be up 2 to 3 percent. Fruits and vegetable use will be up significantly as production recovers from many weather-related difficulties encountered for 1982 supplies. Further increases in corn sweeteners use will offset some decline in sugar consumption. Cereals and bakery products use will be up due to large wheat and rice supplies.

Summary

Moderation in food price rises this year continues a pattern of slowing annual increases that began following the double digit rises at the end of the 1970s. A lower general inflation rate has been reflected in a slowing of food marketing costs. Per capita consumption of food has fallen off some this year, largely due to lower pork and fruit supplies. However, weak demand for food has limited increases in the farm value of food.

The outlook for food in 1983 indicates a 3 to 6 percent rise in retail food prices. The general inflation rate may slow some next year and again hold down marketing costs. Total per capita food consumption is expected to be up about 1 percent in 1983. Increased consumption of crop product foods, led by a recovery of fruit supplies, will offset slightly lower consumption of animal product foods. Demand for food may improve some, but with larger food supplies the farm value of foods will be up only slightly.

Dr. Timothy M. Hammonds, Food Marketing Institute

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FOOD SHOPPER BEHAVIOR CHANGES
TIMOTHY M. HAMMONDS

I am very pleased to be appearing before you in 1982 now that we have a major shift in investor attitudes toward this industry. Stock markets have just discovered supermarkets.

This discovery reverses a longstanding climate of investor indifference toward this sector, and well it should. When economic recovery comes it will be led by consumer retail spending and supermarkets will be on the front line of that revolution. But an even more fundamental reason exists for changing investor attitudes. The supermarket industry has been busily repositioning itself over the last ten years for the America of the 1980s and beyond.

Much of this repositioning is due to recognizing and responding to the changing consumer, the title subject of this talk. But credit must also be given to a systematic development program for improving total system productivity, our second topic for today.

Before we begin, let me pause to acquaint you with our association. FMI is the largest and most successful grocery distributor trade association. We are located here in Washington representing supermarkets and grocery wholesalers in research, education, and public affairs. All of the large distributor corporations which spring readily to mind are members, but fully one-half our membership is composed of one-store operators, and over three-quarters of our members are independents (those with ten stores or less). We, therefore, bring together the total industry under one roof, from the smallest operator to the largest.

Turning now to food shopping, perhaps the most important message to deliver today is that America is changing and the food distribution industry must change with her. More than most industries, food distribution is a mirror of the American consumer. This happens in part because we see almost every family in the country at least once a week. But the real reason is that food is such an important part of our total lifestyle, a reflection of our national personality.

When lifestyles change, the food America serves and eats changes. This is the basic reason why the supermarket is now undergoing changes of its own on a scale unmatched since the earliest days of its short 50 year history.

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This industry is evolving with the consumer. Although the history of American industry is to wait until it is too late to make fundamental corrections, the supermarket industry is evolving side by side with the shopper.

Let's take just one small example. The supermarket industry was one of the first in the country to realize the most literal interpretation of the American "melting pot" was a myth. As a result, supermarkets helped lead us in the celebration of cultural diversity which now lends so much strength and richness to our country.

The evolution we have been talking about is an ongoing process. As long as consumers are changing, the industry will continue to change with them.

At FMI, we conduct a continuing series of consumer research studies to understand the forces at work in our society. Two years ago our focus was on nutrition and health. This year it is on the battleground between lifestyles and economic uncertainty. It is this most recent research work that I would like to share with you today.

In February of this year FMI, in cooperation with Woman's Day magazine, surveyed a national, projectable sample of supermarket shoppers through the firm of Yankelovich, Skelly and White. The extent of recent changes in behavior, quite frankly, surprised us.

Three out of four said they had changed their lifestyles within the last year or so. Two out of three said they had changed the food they serve and eat over this same period. That is certainly a groundswell worthy of note.

Perhaps of equal note, we found almost no insulated socio-economic group. In fact, the vast majority of those making significant changes come from the middle and upper socio-economic groups.

Why the changes? Are they for nutrition and health? No, they are not. Saving money is the prime motivator today. This does not mean that health and nutrition concerns have been completely submerged. These concerns are indeed still motivating behavior changes and will continue to do so in the future. It simply means that this current has been overwhelmed by the tidal wave of economic uncertainty for the time being. As an illustration of this point, the single biggest worry in our sample this year was the fear of job loss by the interviewee or someone in his or her family.

Now, exactly what behavior changes did we find in the last year or so? We found:

- less eating away from home at restaurants and fast food outlets
- more eating together as a family
- less of an attitude that serving any food at any meal is acceptable (more traditional meal patterns)
- greater use of unit pricing
- greater use of coupons

- less rushing from store to store to find a bargain (more store loyalty, more one-stop shopping)
- increased purchasing of generics and store brands
- less brand loyalty, especially among those of 50 years of age and younger.

This list raises many interesting points for discussion. However, because time at this session is short, let me confine my comments to the most interesting question: brand loyalty.

Our findings do not mean that brand loyalty is dead. Quality products which deliver real value for the dollar still command consumer loyalty. At the same time, it is clear this loyalty is not what it used to be. This has occurred for a variety of reasons, at least two of them resulting from actions taken by the manufacturers themselves: the rapid expansion of coupons issued, and the heavy use of deal merchandising.

Let's take these one at a time. Coupons have become very popular with consumers. This fact coupled with the very tight competitive market brought on by our recession has caused a virtual explosion in the number of coupons issued. While this has been a good short-run strategy for many individual manufacturers, the long-run effect may be quite different. As shoppers begin to come to the store not with a shopping list but with a hand-full of coupons, brand loyalty is eroded.

A second practice which may well contribute to brand loyalty erosion in the long-run is the heavy use of deal merchandising. Consumers are becoming increasingly used to buying items only when they are on special. In fact, they are increasingly seeing new store formats which carry not a consistent stock of brands, but only those on special price promotions. This encourages brand switching. Once again, we find a very effective short-run strategy which may produce an unintended result in the long run.

Heavy reliance on deal merchandising also tends to move products through the distribution system in big lumps rather than in a smooth flow. This causes a loss of efficiency in both the distributor and manufacturer community. We arrive, therefore, at our second major topic of the day, total system productivity.

Although there is no perfect measure of productivity, the Bureau of Labor Statistics does provide us with a reasonable approximation. According to their data, over the last ten years productivity in food manufacturing has increased while food retailing productivity has actually declined.

Over the last ten years, as the industry has been repositioning itself for the consumer of the 1980s and beyond, it has also been repositioning itself for increased productivity. Taking but a few examples: average store size continues to increase allowing more efficient fixed asset utilization; UPC scanning continues to spread allowing development of a more productive front-end and the accumulation of item movement data; the Uniform Communication System has been successfully pilot tested and released making

possible direct communication of purchase orders and invoices among manufacturer, broker, and distributor computers; the use of small computers has exploded to streamline everything from inventory management to analyzing advertising effectiveness; and a joint industry study has just been released detailing recommendations for improving the efficiency of the coupon handling process throughout the entire food distribution system.

The list is long. The point is that the industry is beginning to make real progress on total system efficiency. Much of this progress is due to research sponsored jointly by the major manufacturer and distributor associations. This has been accomplished, as it should be, without government funding and without the creation of an elaborate oversight bureaucracy. There is no better current model for addressing total system productivity than the grocery industry.

Conclusion

All in all, the story of the food distribution industry is a healthy one. By developing a model for addressing total system efficiencies and by constantly monitoring customer behavior, this industry has been able to reposition itself for the 1980s and beyond.

On the customer front, the industry has moved from picketing to partnership. Rapid price increases in the early 1970s caught everyone by surprise, industry and consumer alike. On the heels of the Russian wheat deal and President Nixon's disastrous wage-price controls, consumers actually picketed retail food stores during this period.

In sharp contrast to attitudes during that time, we now find customers increasingly viewing the supermarket as a partner in helping them cope with economic uncertainty.

The industry has come to understand customer concerns and has moved to address them. During the last decade we have seen:

- a rapid expansion of the hiring of professional consumer affairs specialists
- a rapid expansion of generic food products and store brand offerings for the economy minded
- an increasing use of unit pricing to allow more effective comparison shopping
- a growing use of in-store information bulletins giving shopping tips and nutrition information
- a redesign of store formats to better accommodate the special needs and wants of each local market.

Perhaps the most dramatic move occurred with the creation of Food Marketing Institute in 1977. At that time the food distribution industry established itself in the Institute charter with the following words:

"The grocery retailer, from the smallest corner store to the largest supermarket company, is the purchasing agent for the customer. At the same time, the grocer and his close working partner, the grocery wholesaler, are the means by which the farmer and other producers make their products available to the public. In these two functions, the grocery retailer and wholesaler serve to satisfy fundamental needs of everyone in our society." (emphasis added)

By striking this new balance the industry has made real and significant progress. In an economy where the norm of behavior has been for industrial armies always to prepare to fight the previous war, the grocery industry stands in sharp contrast. This industry is busily and continuously repositioning itself for the future.

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Rising food prices are currently not a major concern of consumers. Low agricultural commodity prices, however, are a major problem for farmers. The Consumer Price Index for all urban consumers - U.S. city average (CPI-U) rose only 5.1 percent between October 1981 and October 1982. The CPI-U for food rose an even lower 3.4 percent during the same period, with the CPI-U for food at home increasing 2.7 percent and for food away from home 4.9 percent. Food prices have had a dampening effect on the overall inflation rate over the last twelve months. Consumers have had very little to complain about regarding food prices recently and this pattern should continue for the next year. With grain stocks at record levels, food price increases should be small in 1983 and probably less than the general inflation rate, unless there are some major surprises.

As we all remember though, this country has been through a period of sustained price increases, both in general and for food. During the period of high inflation, the CPI for wage earners and clerical workers for food rose from 126.0 in December 1972 to 276.6 in July 1981. An increase of 120 percent in eight and one-half years, an annual average price rise of over 9 percent. In this period the annual increase in food prices was less than 6 percent only during 1976, based on a comparison of the average annual CPI indices.

Consumers are particularly sensitive to rising food prices, because of the large proportion of the average household's budget involved and the frequency of purchases. The cost of food at home, as estimated by USDA, for a moderate-cost meal plan for a family of four (with two elementary school age children) was \$43.00 per week in December 1972. This figure had risen to \$90.00 by June 1981, an increase of 109 percent. During the entire thirteen year period from 1960 until the end of 1972, the increase in the cost of this meal plan had only been 35 percent, rising from \$31.90 in January 1960.

From another perspective, food has remained a remarkable bargain in the U.S. By 1970, the proportion of disposable income spent on food had declined to 17 percent. This figure held at roughly this level during the 1970's and has fallen below 17 percent in the last few years. In the second quarter of 1982, 16.1 percent of disposable personal income was spent on food, only 11.7 percent went to food consumed at home. In comparison, food expenditures accounted for 25 percent of disposable income in 1929. The average American household spends a smaller portion of its budget on food than in almost any other nation. Food accounts for over 30 percent of total per capita consumption expenditure in Japan and over 25 percent in the United Kingdom. However, in the U.S., food can still represent a large drain on low income families' budgets. In 1979 the bottom fifth of families, in terms of income, spent 35 percent of their pre-tax income on food.

Retail food price changes are generated by two quite different sets of factors. One set of forces affects the farm-level value of basic agricultural commodities. The other set affects overall marketing costs. About 2/3's of the cost of food to the consumers is added after the product leaves the farm. The CPI-U for food stood at 287.0 in October 1982. The CPI-U for all items was 294.1. The closeness of these two indices indicates a remarkable long-run correspondence between the general inflation rate and increases in food prices. The major force pushing up consumer food prices is the general inflationary pressure on costs after the products leave the farm.

Food prices are affected by the costs of processing, transporting, and retailing. Labor costs are responsible for the largest share in increased food marketing costs. As in many areas of the economy, labor productivity in the food marketing system has improved only erratically in the last decade. The long-run key to controlling food prices is to contain the general inflation rate and improve productivity in the marketing system.

However, since the basis of the food system is agricultural production, food prices retain a unique volatility. Fluctuations in basic commodity prices due to weather and foreign demand can have a sharp short-run impact, especially on certain food prices. This was clearly demonstrated following the Russian Grain Deal of 1973, with exports to other countries also booming. The general inflation rate was only 6.2 percent in 1973 measured by the CPI, whereas the food index increased 13.2 percent. And in 1974, the increases were 11 percent and 13.8 percent, respectively. Beef and veal prices rose 29 percent during the first nine months of 1973.

In fact, given the vagaries of the weather, the recent food supply and price situation could have evolved quite differently over the last two years. In the summer of 1980 there was a drought throughout much of the Midwest. Consequently, feed-grain stocks were at near-record lows in the spring of 1981. Adverse weather conditions or some other crop disaster in the 1981 growing season could have sent prices through the roof. Instead, with highly favorable weather, there have been two years of bumper harvests.

Behind the aggregate price indices, there are significant changes in the relative prices of many food products, which deserve attention. Some of the most dramatic changes have occurred for meat and poultry. The July 1980 CPI-U with 1967 = 100 was 267.9 for beef and veal, 200.3 for pork, and 187.9 for poultry. The food at home CPI-U stood at 251.5. The price of pork, therefore, became more attractive relative to beef and also to other food items in general. Poultry became a markedly more attractive buy in relation to red meats, especially beef, and other grocery cart items in general. These relative price shifts represent a long-run trend and are not just the result of short-term fluctuations.

The evidence clearly suggests that consumers responded to these relative price changes by adjusting their consumption pattern. The per capita consumption of beef and veal fell from 82 pounds (retail weight) in 1967 to 78 lbs. in 1980. At the same time, pork consumption increased from 60 to 68.3 lbs. Poultry consumption (chicken and turkey) rose from 44.9 lbs. to 60.5 lbs. between 1967 and 1980, a 35 percent increase. Meat and poultry consumption

have been affected by other factors also, but price shifts have unquestionably had a major impact.

I had a chance to review a preliminary version of Paul Westcott's paper and found very little with which to disagree. Perhaps some explanation is needed with regard to our seemingly contradictory figures on 1982 retail food price increases, which Westcott said averaged about 4.5 percent higher than in 1981. My figure of 3.4 percent is based on a comparison of the CPI-U in October 1982 with the level in October 1981. Westcott's food price changes, reported in his Table 1, are based on a comparison of annual average CPI levels for the various years. Westcott's price increase for 1982 is a preliminary estimate. For this reason, I prefer the accuracy of my figure. With food price increases decelerating, my figure is lower. Between June and October 1982 the CPI-U for food actually fell slightly from 287.8 to 287.0.

My guess is that when the December 1982 CPI-U for food is available, a comparison with the December 1981 figure will yield an annual increase of 3.5 percent, or quite possibly slightly less. For next year, Westcott's estimate of 4 percent as the most likely percentage increase in food prices seems a good one. My estimate might be a little higher, say 4.5 percent, but since the future can be full of surprises, these very low projections might look quite foolish in retrospect.

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OUTLOOK '83

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Thank you for joining us today. After two and a half days of listening to speeches, I thought you might appreciate a piece that appeared in a Midwestern newspaper a while ago. The editor was complaining about how verbose we get here in Washington. He pointed out that the Ten Commandments contain only 279 words. The Bill of Rights is a mere 463 words. The Gettysburg Address has only 296. But the federal regulations on marketing cabbage come to a resounding 26,911.

That story is probably a bit apocryphal, but I promise to keep it in mind and stop speaking before I see any heads nodding in the back of the room. Since the Office of International Cooperation and Development is not exactly a household word, perhaps I should begin by telling you a bit about our work here at USDA. By federal standards, OICD is a small agency -- just a little over 200 people. Most of our work is in fact done under contracts with the Agency for International Development, international organizations, and foreign governments. In handling these contracts, we often turn to other USDA agencies, the university community, and the private sector for the personnel we need to handle our projects.

OICD's mission, simply put, is to oversee the Department's policies and programs that deal with international cooperation and development. That takes in quite a lot of territory -- technical assistance to developing countries, training programs for foreign agriculturalists, relations with international organizations like the development banks and the Food and Agriculture Organization of the United Nations, scientific and technical exchanges with other countries, and cooperative research.

With the economy in trouble and the need for austerity in federal spending, the natural question becomes, "Why are we spending money on programs overseas?" Where's the payoff in these programs for the farmers in Iowa, Kansas, or Nebraska?

That's the question I'm here to answer today. It's my feeling that dollar for dollar OICD's programs contribute as much as any in the Department to improving the outlook for American agriculture.

There are two ways our programs help the American farmer. The first is by promoting and protecting agricultural production and the second is by actively supporting U.S. farm exports, especially to the growing markets in the developing world.

Let's take production first. OICD's international research and scientific and technical exchange programs are geared toward finding new and improved ways to grow crops here in the United States. At present, USDA has over 50 bilateral or multilateral exchange agreements with other countries and more than 300 U.S. scientists are taking part in these programs.

One of the most potentially valuable and interesting exchange agreements we have is with China. The germplasm exchanges with the Chinese have already filled gaps in the U.S. collections, especially for wheat and soybeans. Soybeans originated in China, and we hope that wild Chinese soybean germplasm will hold the key to further gains in yields here in the United States and to the development of both new disease-resistant varieties and varieties that American farmers can grow in both existing and new production areas.

Chinese successes in swine breeding -- up to an amazing 18 births per litter -- have, needless to say, generated tremendous interest among U.S. pork producers. And OICD is working with the Animal and Plant Health Inspection Service on importing Chinese swine germplasm in the near future. Eventually producers in Illinois and Iowa may see greater profits as a result of these efforts.

Guayule production is another area we've begun to explore. This time the payoffs should not only help U.S. farmers, but the country as a whole. United States' dependence on foreign rubber supplies has been a serious strategic problem for quite some time and guayule production may hold the key to overcoming that dependence. OICD has already established agreements with Australia and Mexico for research on developing the guayule plant as a source of natural rubber. If the projects succeed, American farmers in the Southwest could find themselves with a new and important cash crop and the United States could eventually lessen its troublesome reliance on foreign sources of rubber.

Overseas research sponsored by USDA also holds promise for improving the rice produced by American farmers. A USDA grant has supported the Coordinated Rice Improvement Project in India which led to the discovery of several rice strains that are resistant to serious pests and diseases that limit production. The resistant lines developed in this cooperative research will be incorporated into the Federal/State rice improvement program here in the United States.

Major farming areas of the United States have been exposed to increasing levels of air pollution and this is another problem we've addressed in our scientific and technical exchange program. Estimates of annual losses due to sulfur and nitrogen oxides have been as high as \$200 million a year. Major agronomic areas will be exposed to even more air pollutants as the shift to coal as an energy source continues in many parts of the country. France is a world leader in research on how crops cope with this kind of environmental stress. And OICD has arranged for U.S. scientists to work with French specialists in this potentially critical area.

Finding better ways to protect American farmers from crop losses has been another major focus of OICD's scientific dealings with other nations. The huge bill for eradicating the Medfly last year and the millions of dollars lost by California citrus producers have focused a lot of attention on preventing the spread of insect pests and animal diseases. Much of OICD's research and scientific exchange activities addresses that need.

About half the 500 species of insects that inflict \$2 billion worth of damage on crops in the United States are developing resistance to insecticides. So OICD has sponsored research in this area and arranged for teams of U.S. scientists to work overseas to collect natural parasites that attack these insects. Introduced into infested areas, these parasites can effectively help control insect damage to U.S. crops and forests. Past performance has shown a \$30 dollar return for each dollar spent on importing these parasites.

Right now we are working with 10 nations in this area. We've brought insects from China that are natural enemies of aphids and moths that attack cotton, tobacco, vegetables, citrus, and trees that are important American agricultural products. The Chinese have considerable experience in biological pest control and U.S. scientists have taken a keen interest in the different techniques now being used in China.

In another project funded through a research grant under USDA's Special Foreign Currency Program, scientists in Pakistan have developed new cultural and managerial methods for controlling two soil-borne fungi that cause stem rot, root rot, and charcoal rot in more than 400 species of plants. Among these are such commercially important crops as cotton, pulses, and potatoes. The control methods developed in Pakistan can also be applied by American farmers who face similar disease problems.

One of the pest control projects we've undertaken may have some very visible results quite close to home. Insecticides have done little to stop the spread of the gypsy moth throughout New England and the Mid-Atlantic States. Last year, OICD sent scientists to India and the Soviet Union to try out a new approach. They returned with parasitic wasps from India that attack gypsy moths and field trials are already underway in Pennsylvania and New Jersey.

OICD's work with international organizations has also been a valuable tool in containing the spread of animal and plant diseases, particularly those which threaten to spread from the Caribbean and Central America into the United States. In the Dominican Republic, OICD arranged for USDA scientists to work with the Food and Agriculture Organization and Dominican authorities in their fight to eradicate African swine fever. By combating this disease abroad, these scientists greatly lessened the likelihood that it will spread to the United States where it could cause an \$8 billion loss to American farmers.

These are only a few examples of how we make a contribution to helping farmers here improve and protect their production. With some 239 cooperative research projects now going on overseas and more than 30 scientific and technical exchange agreements, there are literally scores of interesting and worthwhile projects underway.

But the meat and potatoes of American farmers is international trade. More than any of his predecessors, Secretary Block has made trade his number one priority in an overall effort to rebuild farm income and overcome past mistakes that have hurt the American farmer in international markets.

While many of OICD's past activities have had a direct impact on trade, it has only been in the last year or two that we have begun to direct our work more specifically in that area and join with other USDA agencies like the Foreign Agricultural Service in efforts to build farm exports.

Our primary focus is to help developing and middle income countries improve their agriculture and overall economies. This is where our programs started. The type of work that we initiated in the past laid the foundation for building new markets for our farm exports.

Let me expand on that point. As the economic vitality of a developing nation improves, so do the capabilities and expectations of its people. The poorest nations are not good customers for U.S. food -- they simply lack the foreign exchange to buy it. But economic studies by USDA's Economic Research Service, the World Bank, and others clearly show that as a nation's economy strengthens and its foreign exchange earnings increase, a major priority is almost invariably more food, a greater variety of food, and improved food security. In other words, there is a greater demand for the products the American farmer has to offer.

A growing number of countries that have received U.S. food and development assistance are now strong commercial customers -- South Korea, Egypt, Mexico, and India are just a few examples. Development work in these nations has paid off and helped build profits for U.S. farm producers. Twenty years ago who would have thought that India would ever become a commercial customer for U.S. wheat instead of a perennial recipient of food aid?

During the 1970's, the developing countries became boom markets for U.S. agricultural exports and the potential for future growth is significant. In fiscal year 1971, U.S. agricultural sales to these countries were only \$2.6 billion, or a third of the total for that year. But these sales jumped to \$17 billion by fiscal year 1981 and accounted for 40 percent of all agricultural exports.

The competition for these markets is growing and the presence or absence of development assistance plays an increasing role in the decisions made by buyers in these countries. Some of our competitors in world markets -- notably France -- have tied agricultural assistance directly to their efforts to secure sales of their commercial food exports.

OICD's technical assistance and training programs do a great deal to foster stronger ties with these developing countries, and there have been both short-term and long-term benefits for the United States.

Here are a few short-term examples. Technical assistance to Tunisia's dairy industry has led to sales of dairy equipment, dairy heifers, and goods and services from U.S. agribusinesses. Development assistance to Botswana contributed directly to more than \$4 million in additional U.S. exports of seed, cattle, and other agricultural products. As a result of an OICD project, Saudi Arabia placed an order for \$12.5 million in date processing plants with a firm based in California. All told in 1982, OICD shipped U.S.-made supplies and equipment from over 300 companies to 16 different countries.

The benefits of our training programs are subtler, but no less real. Since 1950, about 70,000 foreign nationals have been trained through these programs. Many of them now hold positions of leadership in their countries and make decisions on who to turn to for the agricultural products they buy overseas. They are the people who often sit across the table from U.S. exporters trying to negotiate sales. We've trained high agricultural officials from South Korea -- a billion dollar market for U.S. farm exports -- and from Thailand, Liberia, and Tanzania to name only a few of the countries we've worked with in agricultural training.

Our scientific exchange and research programs have proved every bit as valuable in promoting trade as they have been in finding new techniques for improving and protecting U.S. crops. Scientific and technical exchanges have helped remove barriers to U.S. livestock exports to China, and assisted FGIS in overcoming problems with the Chinese over the quality and standards for the grain they buy from the United States.

Nontariff trade barriers continue to be the bane of U.S. exporters trying to sell more of their products, especially in the EC and Japan. And this is another area where we've begun to intensify our efforts. OICD's scientific and technical exchanges have been working with the Japanese on relaxing their zero tolerance requirement for salmonella in imported poultry and other meat products. In Europe, OICD is working with the West Germans on the problem of blue tongue which has hurt U.S. livestock exports to the EC. The goal is to adopt a German seriological test for blue tongue that is not available now in the United States. This will save USDA a great deal of effort and money in research and help speed eradication of the disease in this country and spur greater livestock exports to Western Europe.

Sometimes the offer of scientific and technical assistance can bring needed support for U.S. positions on trade policy. In return for assistance to their almond industry, the Italians are now prepared to support U.S. efforts to eliminate the EC import duties on American almonds. The California Almond Growers' Association puts the value of the EC almond market at \$250 million.

There are a host of other projects with exciting potential for trade:

--Work with the Hungarians on near-infrared measuring of the quality of foodstuffs is one of them. This technique is both cheaper and faster than conventional chemical methods and would be an invaluable tool for U.S. grain exporters.

-- A leather research project with the French that may lead to a \$10 to \$20 million market for sales of U.S. pigskin in Western Europe.

-- The U.S. Holstein Friesian Association hopes to use a livestock breeding project in Poland to build breeding stock sales to countries in the Eastern Bloc.

These are some of our bilateral efforts. But we also work with international organizations which, the United States pays to support, to encourage them to continue activities helpful to U.S. farmers and exporters. OICD takes the lead in placing U.S. technical experts on the staffs of international organizations. At our request, the Food and Agriculture Organization reinstituted the collection and analysis of textile production and consumption in member nations. U.S. cotton associations need this kind of information to help their members develop more effective marketing strategies. And we are now working with the Economic Research Service and the Foreign Agricultural Service to improve the agricultural data on the Caribbean and Latin America through a cooperative project with the Inter-American Institute for Cooperation on Agriculture. This, too, should help U.S. exporters market their products more effectively.

In the last year or so, we've started to branch out into new areas largely in response to the President's proposals at Cancun and the new Caribbean Basin Initiative. These efforts, and those of our new Agribusiness Office, are directed at getting the private sector here in the United States more directly involved in development work overseas that benefits both the United States and the developing world.

As President Reagan noted at Cancun, the tremendous potential of trade in strengthening the economies of developing nations is often overlooked. More private sector involvement and investment can foster that trade. And, what's more important, trade remains long after the development experts have packed their bags and gone home.

OICD has worked with the Agency for International Development on sending Presidential Agricultural Task Forces drawn from the private sector and government agencies to Peru, Thailand, Liberia, and Honduras. Most recently, OICD took the lead in sending another task force to Venezuela.

As part of the Caribbean Basin Initiative, Secretary Block has created an Agribusiness Promotion Council in OICD to encourage U.S. agribusiness to engage in joint ventures in the Caribbean. The Council will be headed by Dr. Ray Goldberg of Harvard and will have its first meeting here in Washington on December 14. As a backup to this effort the Secretary has also established an Agribusiness Information Center in our agency that will assist U.S. companies interested in investing in the Caribbean Basin.

As you can see from this overview of OICD's activities, money spent on overseas development and cooperation in agriculture does have payoffs for America's farmers and agribusinesses. Our Administrator, Dr. Wallace, and I spend a great deal of time trying to bring this point home both inside and outside the Department. But the idea that development can pay off for the people who spend the time and effort on it is not a new one. A while ago I ran across a quote on the subject I'd like to share with you.

"If you find any island or main land where the people need our cloth, then advise us of what commodities they have to purchase it with. If they are poor, then consider the soil and find ways they can use it to enrich themselves so that they may have something to use to purchase our cloth."

The quote is from Richard Hakluyt, an English historian and geographer. He saw the advantages of development in the New World back in 1580. I think it is fair to say that his advice paid off quite well.

Frank R. Gomme, Foreign Agricultural Service, USDA

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The Soviet Union and The World Grain Market

Even with apparent import demand down in 1982/83, Soviet trade continues to be the single most significant factor in the world's grain market. Last year, the USSR accounted for 20 percent of the world's wheat imports and a quarter of the world's coarse grain trade. The Soviets were the largest single buyer of wheat flour and rice. No wonder the grain world focuses on the outlook for the next Soviet crop and closely follows Soviet trade developments.

World grain trade patterns have shifted as the Soviets diversified sources of supply since the January 1980 grain embargo. Many of our export competitors have registered a significant jump in sales to the Soviets. The past 2 years have seen the Soviets take around three-fourths of the Argentine grain shipments, nearly a third of Canada's grain outgo and over 20 percent of Australia's grain exports. Commodities other than grain have also benefited from the Soviet's more prominent role as an importer as they have also taken significant quantities of soybeans and soybean meal and meat products.

Soviet Crop Outturns Continue to Come Up Short

The 1982 Soviet grain crop, currently estimated at 180 million tons, marks the fourth consecutive poor harvest. In fact, Soviet grain production in 7 out of last 10 years has fallen below 200 million tons. This has necessitated either a drawdown in stocks, imports or both to maintain consumption levels.

Grain production averaged well below the plan level of 220 million tons for the 1976-80 period. With production estimated to average only 170 million tons for the first 2 years of the current 5-year plan, it seems quite unlikely that the Soviets will be able to reach the plan projection of 238-243 million.

Grain area for harvest for the 1982 crop was only 122 million hectares, lowest since 1972. Recent years have seen more area devoted to summer-fallow. According to Soviet journalists, many problems have affected the ultimate crop outturn including delays in receiving production inputs, mismanagement of production resources, excessive losses at harvest and in transit, the list goes on and on. In addition, weather has struck repeated blows to grain yields in recent years. Drought and excessive summer heat have been a reoccurring problem over the Soviet grain belt.

USSR: Total Grain, Wheat, and Coarse Grains: Supply/Utilization 1972/73-1982/83

Year	Trade			Availability 1/ July/June (Million Metric Tons)	Total 1/ Seed	Industrial	Food	Dockage/ Waste 2/ Feed	Stock Change 3/ July/June		
	Production	(July/June)									
		Imports	Exports								
1972/73	168	22.8	1.8	189	187	26	3	45	15	98	+2
1973/74	223	11.3	6.1	228	214	27	3	45	33	105	+14
1974/75	196	5.7	5.3	196	206	28	3	45	23	107	-10
1975/76	140	26.1	0.7	166	180	28	3	45	14	89	-14
1976/77	224	11.0	3.3	232	221	29	3	45	31	112	+11
1977/78	196	18.9	2.3	213	228	28	4	45	29	122	-16
1978/79	237	15.6	2.8	250	231	28	4	46	28	125	+19
1979/80	179	31.0	0.8	209	222	28	4	46	22	123	-13
1980/81 5/	189	34.8	0.5	223	228	27	4	47	28	122	-5
1981/82 6/	160	46.0	.5	206	206	27	4	47	16	112	0
Projected 1982/83	180	37.0	.5	216	216	27	4	47	18	120	0
Wheat											
1972/73	86	15.6	1.3	100	98	14	1	5	8	41	+2
1973/74	110	4.5	5.0	109	96	14	1	34	16	30	+13
1974/75	84	2.5	4.0	82	93	14	1	34	10	34	-11
1975/76	66	10.1	0.5	76	87	15	1	35	7	30	-11
1976/77	97	4.6	1.0	100	92	15	1	35	14	28	+8
1977/78	92	6.6	1.0	98	108	15	1	35	14	44	-10
1978/79	121	5.1	1.5	125	107	14	1	35	14	43	+18
1979/80	90	12.0	0.5	102	115	15	1	35	11	53	-13
1980/81 5/	98	16.0	.5	114	117	15	1	36	15	50	-3
1981/82 6/	80	19.5	.5	99	99	15	1	36	8	39	0
Projected 1982/83	86	17.0	.5	102	102	15	1	36	9	41	0
Coarse Grains											
1972/73	72	6.9	0.4	79	79	11	2	7	7	53	0
1973/74	101	6.4	0.9	106	105	11	2	7	15	70	+1
1974/75	100	2.7	1.0	101	100	11	2	7	12	68	+1
1975/76	66	15.6	--	81	84	12	2	7	7	56	-3
1976/77	115	5.7	2.0	119	116	12	3	7	16	78	+3
1977/78	93	11.7	1.0	103	109	11	3	7	14	74	-5
1978/79	105	10.0	1.0	114	113	12	3	7	13	79	+1
1979/80	81	18.4	--	100	100	12	3	7	10	68	0
1980/81 5/	81	18.0	--	99	101	11	3	7	12	68	-2
1981/82 6/	72	25.5	--	98	98	11	3	7	7	70	0
Projected 1982/83	85	19.0	--	104	104	11	3	7	8	75	0

1/ Availability excludes beginning stocks. Totals may not add due to rounding.

2/ Includes post harvest losses incurred in transport and storage.

3/ Minus indicates withdrawal from stocks.

4/ Total grain production, trade, and utilization figures include pulses, paddy rice, buckwheat, and miscellaneous grains

5/ Preliminary for trade, availability, utilization, and stocks change.

6/ Forecast for production, trade, availability, utilization, and stocks change.

Soviet Import Estimates Revised

Soviet grain-buying activity continues to lag well behind last year's record-setting pace. Soviet grain imports for 1982/83 are currently estimated at 37 million tons, substantially below last year's 46 million. Grain purchases from all origins for shipment in 1982/83 presently total around 17 million tons, about half the total at this time last year. Wheat accounted for roughly two-thirds of the Soviet early season buying.

The estimate of Soviet wheat imports as of early-December is placed at 17 million tons, down from the record-shattering 1981/82 estimate of around 19.5 million. So far during the 1982/83 marketing year, the Soviets appear to have purchased about 10 million tons of wheat--but none from the United States. Over the past 3 years, the Soviets purchased around 5 million tons annually from Argentina and Australia. However, prospects for a good 1982 wheat crop in Argentina have been more than offset by a poor crop in Australia. Consequently, Soviet wheat imports from these sources are likely to be lower this year, possibly totaling 3-4 million tons. However, reports out of the EC and Canada suggest that some additional sales from these sources are possible.

The estimate of Soviet coarse grain imports at 19 million is down nearly a fourth from a year ago. Purchases to date have been quite small, totaling only about 7 million tons. Grain agreements or trading arrangements with various suppliers will assure the Soviets nearly 8 million additional tons in the months ahead, leaving around 5 million still to be bought either from other origins or beyond basic agreement levels.

Grain Shipments Continue to Lag

September grain shipments to the Soviets from the major suppliers were well short of the record pace of over 5 million tons set in May. Preliminary indications for October point to some improvement. For the July-October period, the Soviets lifted slightly over 7 million tons of grain from the major suppliers. This is only around half their imports for the same period a year ago. At the recent U.S.-USSR consultations, the Soviets reported that grain purchases from all origins for shipment in the July-December 1982 period totaled 12-13 million tons, but that there could yet be some further purchasing for that shipment period. This suggests some improvement in the pace of Soviet imports during November and December to around 3 million tons a month, if shipping schedules are met.

Soviets Turn to More Grain Agreements

Recent years have seen the Soviets turn increasingly to trading agreements or arrangements to cover their annual grain import needs. Such arrangements presently assure the Soviet Union access to nearly 20 million tons of grains from all suppliers during the 1982/83 marketing year. In some cases, these agreements are much broader than grains, covering oilseeds, livestock products and other agricultural items.

One of the most important results of these agreements is that they have provided a mechanism for the expansion of grain trade beyond the agreement level. A good example is the recent announcement by Canada of sales to the

USSR Imports of Wheat and Coarse Grains by Source 1972/73 - 1981/82

July/June Years
(Million Metric Tons)

	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	Preliminary 1980/81	Projected 1981/82
<u>Wheat</u>										
U.S. 1/	9.5	2.7	1.0	4.0	2.9	3.3	2.9	3.9	3.0	6.9
Canada	4.2	1.6	.3	3.2	1.2	1.7	2.0	2.1	4.5	4.8
Australia	.9	.1	.6	1.2	.4	.3	.1	2.7	2.5	2.4
Argentina	--	--	.6	1.2	.1	1.1	--	2.0	3.0	3.1
EC	.7	--	--	--	--	--	--	.7	.9	1.7
Others	.3	.1	--	.4	--	.2	.1	.6	2.1	.6
Total*	15.6	4.5	2.5	10.1	4.6	6.7	5.1	12.1	16.0	19.5
<u>Coarse Grains</u>										
U.S. 1/	4.2	5.2	1.3	9.9	4.5	9.2	8.3	11.3	5.0	8.5
Canada	.9	.2	--	1.3	.2	.2	.1	1.3	2.3	4.4
Australia	--	0	.1	.8	.1	--	--	1.3	.4	.1
Argentina	.1	.3	1.1	.2	.2	1.6	1.4	3.1	8.2	10.2
EC	1.2	.5	.1	.5	.2	.2	.2	.2	.6	.7
Others	.5	.2	.1	2.6	.3	.6	--	1.2	1.5	1.6
Total*	6.9	6.4	2.7	15.6	5.7	11.7	10.0	18.3	18.0	25.5
<u>Total</u>										
U.S. 1/	13.7	7.9	2.3	13.9	7.4	12.5	11.2	15.2	8.0	15.4
Canada	5.1	1.8	.3	4.5	1.4	1.9	2.1	3.4	6.8	9.2
Australia	.9	.1	.7	2.0	.5	.3	.1	4.0	2.9	2.5
Argentina	.1	.3	1.7	1.4	.3	2.7	1.4	5.1	11.2	13.3
EC	1.9	.5	.1	.5	.2	.2	.2	.9	1.5	2.4
Others	.8	.3	.1	3.0	.3	.8	.1	1.8	3.6	2.2
Total*	22.5	10.9	5.2	25.7	10.3	18.4	15.1	30.4	34.0	45.0

-- Denotes less than 50,000 tons.

* Totals may not add due to rounding. Excludes rice and pulses.

1/ U.S. exports based upon Export Sales data, which normally include transshipments whereas Census data may not.

SOURCE: Based on reports of countries exporting to the USSR.

Soviets of 7.6 million tons, well above the 4.5-million-ton minimum. A calendar year 1982 agreement provided for minimum Argentine sales to the Soviets of 4 million tons of coarse grains. Sales to date of all grains total around 9 million tons.

The large number of Soviet agreements with grain suppliers has increased pressures on all potential exporters to either seek or maintain agreement positions with the Soviets.

Soviets Purchases of U.S. Grain Modest To Date

After a one-year lapse, the United States in 1981/82 regained its position as the largest grain supplier to the Soviet Union. The major difference from earlier years, however, was that the United States lost a significant share of the Soviet grain market to its competitors. The U.S. share of Soviet grain imports in 1981/82 totaled only around 33 percent compared with a pre-embargo average level of well over 50 percent.

The U.S. is expected to continue as the Soviets largest grain supplier in 1982/83, although the pace of sales to date cannot be too reassuring. As of November 17, U.S. grain sales to the Soviets totaled 3 million tons, exclusively corn. The Soviets have not as yet purchased any wheat from the 1982 U.S. crop. In fact, there have been no significant U.S. wheat sales to the Soviets since November 1981. The Soviets have expressed concern about the quality of the 1982 U.S. Hard Red Winter wheat crop. At the recent consultations held in the Vienna, the Soviets again raised the issue of the quality of U.S. grain that they had received. At these meetings, the United States agreed to continue working with the Soviets and grain companies to improve the arrival quality of U.S. grain. At that time, a team of Soviet specialist was invited to visit the United States for about 10 days beginning November 16 to study the U.S. wheat situation.

U.S. Offers Additional 15 Million Tons

Earlier this year, the United States and Soviet Union agreed to a second one-year extension of the U.S./USSR Long-Term Grain Agreement (LTA), which was to expire on September 30, 1982.

At the semi-annual consultations provided for under the grain agreement, held in Vienna on October 28, the U.S. officially advised the Soviet Union that, beyond the 8 million tons provided for in the agreement, the United States would make available an additional 15 million tons for Soviet purchase during the seventh agreement year (October 1, 1982-September 30, 1983) without the necessity of further consultations. No proportion of wheat and corn was specified. For any Soviet purchases made against the 15 million tons during November, and shipped within 180 days, the United States is extending the same assurances that are now given under Article II of the agreement to the basic 8 million tons of trade.

Domestic Use Holds Up Despite Short Crops

Soviet domestic grain requirements in recent years have averaged around 200 million tons. Food, seed and industrial use normally account for 75-80 million tons and vary little from one year to the next. Grain for feed

reached a peak of 125 million bushels in 1978/79. Feed use of grain has normally absorbed the bulk of any cutback in domestic utilization caused by significant crop shortfalls. During the 1979/80 - 1981/82 period when the annual grain outturn fell well short of requirements, the Soviets minimized the impact by dipping into stocks and expanding imports. As stockpiles shrank, the Soviets were forced to return more frequently to the world's granary, culminating in a record 1981/82 import of 46 million tons. These large imports, along with efforts to more efficiently use grain for feed and to expand use of other feed items helped the Soviets minimize adjustments in the livestock sector. Even with 9 percent less grain fed during 1981/82, the Soviets were able to reasonably maintain livestock inventories, although both slaughter weights and productivity continued to suffer.

Total grain availability is expected to be up in 1982/83 as large imports partially offset another poor crop. Consequently, domestic use, particularly feed use, is expected to register some recovery in 1982/83. With large world grain supplies and low prices, the Soviets might even add to grain stocks during 1982/83, although there is no evidence of this happening so far.

Livestock Sector Shows Some Signs of Recovery

Generally the outlook for the USSR livestock sector appears to be better this year than last with an improved grain crop and better forage supplies. Although performance in the Soviet livestock sector remains well short of planned levels and continues to reflect a stressed feed situation, some improvement is evident. Livestock inventories on October 1 continued to show record cattle, hog and poultry numbers as of that date.

The 343-kilograms average weights of cattle sent to slaughter during January-September were down 7 kilograms from a year ago and were the lowest weights for this same period since at least 1977. However, the number of cattle marketed during this 9-month period was the largest since 1978. While the average weight of hogs sent to slaughter, at 101 kilograms, remained at the same level as in 1981, it was down 4 kilograms from the peak reached in January-September 1978. Marketings were down 3 percent from a year earlier to the second lowest level in 6 years.

Total USSR meat production (slaughter weight) this year is expected to make a small gain and could reach 15.3-15.4 million tons, compared to the 15.2 million tons produced in 1981.

Total livestock inventories (in both socialized and private sectors) at the beginning of 1983 are expected to show record numbers of cattle, cows and poultry and little change in hog numbers, but a relatively large decrease in sheep and goats. In the latter case, the hot, dry conditions which prevailed during most of the summer months in the southern regions of Central Asia and Kazakhstan (where large numbers of these herds are concentrated) caused very poor conditions for grazing.

Summary

Four years of poor harvest have thrust the Soviets to the forefront of the world grain market. Last year, 1 of every 5 tons of grain that traded in world commerce went to the USSR. Soviet import needs appear to be down this

year, but they will still likely be the largest single buyer of wheat and coarse grains. Unless the Soviets enjoy a string of good harvests, they will continue to be a significant factor in grain trade. In spite of four poor grain harvests, the Soviets still managed to maintain livestock inventories, providing a sound base for future growth in the livestock sector and in potential feed demand. Concern about access to foreign grain supplies has encouraged the Soviets to initiate a series of grain trading agreements or arrangements with suppliers. These arrangements cover over half of the Soviets 1982/83 import needs of 37 million tons. If Soviet grain import demand should shrink in the future as a result of a series of good crops, competition for the Soviet market not protected by trading agreements could be fierce.

USSR Grain Area, Yield, and Production
1973-1980,
1981 (Preliminary) and 1982 (Forecast)

Grain	Area (Million Hectares)	Yield (Metric Tons Per Hectare)	Production ^{1/} (Million Metric Tons)
<u>Wheat</u>			
1973	63.2	1.74	109.8
1974	59.7	1.41	83.9
1975	62.0	1.07	66.2
1976	59.5	1.63	96.9
1977	62.0	1.49	92.2
1978	62.9	1.92	120.9
1979	57.7	1.56	90.2
1980	61.5	1.60	98.2
1981 (Preliminary)	59.2	1.35	80.0
1982 (Forecast)	57.0	1.51	86.0
<u>Coarse Grains</u> ^{2/}			
1973	55.2	1.83	101.0
1974	59.4	1.68	99.7
1975	58.1	1.13	65.8
1976	60.9	1.89	115.0
1977	60.6	1.53	92.6
1978	58.0	1.82	105.4
1979	61.2	1.33	81.2
1980	57.9	1.40	80.5
1981 (Preliminary)	58.0	1.24	72.0
1982 (Forecast)	57.0	1.49	85.0
<u>Total Grain</u> ^{3/}			
1973	126.7	1.76	222.5
1974	127.2	1.54	195.7
1975	127.9	1.10	140.1
1976	127.8	1.75	223.8
1977	130.3	1.50	195.7
1978	128.5	1.85	237.4
1979	126.4	1.42	179.2
1980	126.6	1.49	189.1
1981 (Preliminary)	125.5	1.27	160.0
1982 (Forecast)	122.0	1.48	180.0

^{1/} "Bunker weight" basis; not discounted for excess moisture or foreign material.

^{2/} Includes rye, barley, oats, corn, sorghum, and millet.

^{3/} Includes wheat, coarse grains, pulses, rice, buckwheat, and miscellaneous grains.

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OUTLOOK FOR U.S. AGRICULTURAL EXPORTS TO EASTERN EUROPE

A new economic era seems to have begun in Eastern Europe. The expansionary policies of the seventies, financed largely by foreign credits, have been shelved, and the growth of domestic consumption, investment, and imports have all been curtailed. U.S. farm exports to the region have suffered greatly as a result. FY 1983 exports, for example, are estimated at \$960 million, down substantially from previous years.

Hard Currency Credits Sustained Economic Growth

During the seventies the East European countries generally followed policies encouraging growth in per capita income, while stabilizing retail prices for staple foods. To satisfy consumer demand for higher meat consumption and to obtain hard currency from exports, growth in livestock production was higher than that for domestic feed. The expanding livestock sector generated a growing demand for grain imports and protein supplements.

Coupled with ambitious industrial development plans based on imported technology, Eastern Europe as a whole had to rely on hard currency credits which by mid-1982 increased to approximately \$79 billion. U.S. agricultural exports benefited from these expansionary domestic policies so that by 1980 U.S. agricultural exports to Eastern Europe--more than \$2 billion worth--were almost as large as they were to all of South America. Less positively, however, by FY 1981, 40 percent of all U.S. agricultural exports to Eastern Europe, including 95 percent of those to Poland, were moving under U.S. credit guarantee programs.

Currently, January-September 1982 agricultural exports to Eastern Europe are running 53 percent below last year. The volume of major exports--grain, soybeans, and soybean meal--are all down with soybean meal exports off 57 percent, grain exports down 51 percent, and soybean exports off 12 percent. Grain exports to Eastern Europe reached their peak in 1980 at 10.4 million tons and averaged 7.2 million tons over the last 5 years. Soybean and soybean meal exports also peaked in 1980 at 732,000 and 1.7 million tons, respectively. Shipments of these 3 commodities accounted for almost 90 percent of the value of U.S. agricultural exports to Eastern Europe. Agricultural exports to Eastern Europe have represented approximately 5 percent of total U.S. agricultural exports in recent years.

Poland, the German Democratic Republic (GDR), and Romania have traditionally been our major customers in the region. Until recently Poland was our largest market, taking about one-third of U.S. farm shipments to Eastern Europe. However, for the first nine months of this year, Poland has dropped to fourth place behind the GDR, Yugoslavia, and Romania. As long as credit remains tight and the poor condition of the Polish economy continues there is little chance Poland will resume its place as the number one U.S. agricultural market in Eastern Europe.

Debt Rescheduling Buys Extra Time

Disappointing economic and hard currency export performance, the breakdown of the Polish economy and the maturity of a large portion of Eastern Europe's debt have combined to produce the current economic crisis in the region.

Net hard currency debt in mid-1982 for Eastern Europe was approximately \$79 billion. Poland leads the region with foreign debt at approximately \$25 billion. Unable to service its debt, the country has just signed a rescheduling agreement with commercial lenders covering payments due this year of approximately \$3.5 billion. This is the second year in a row that Poland has rescheduled its commercial debt and Polish officials have already expressed their desire for a third such agreement for 1983. Other major debtors are Romania (\$10.2 billion), Yugoslavia (\$17 billion) and the GDR (\$12.7 billion), all traditionally major U.S. farm markets.

In addition to Poland, debt repayments have been particularly burdensome for Romania which is currently negotiating a rescheduling agreement with its commercial lenders following a similar agreement for 1982 with its government creditors. For the region as a whole, only Bulgaria and Czechoslovakia, small U.S. agricultural markets, appear best suited to service their debt because of traditionally conservative hard currency import and borrowing policies.

Slowdown in Economic Growth, Livestock Production Foreseen

Faced with mounting repayments and sharply reduced credit availability, officials in the region have been forced to cut imports and domestic consumption and to expand exports. To facilitate this, economic growth must decelerate in Eastern Europe. Targets for 1982 increases in national income range between -8 percent in Poland and a traditionally optimistic 5.5 percent in Romania. For the 1981-85 plan period, much smaller increases in national income are anticipated than in previous plans.

An integral part of the anti-import policies is a reduction of agricultural imports. Deficits on agricultural trade accounted for an average 30 percent of the region's total trade deficits in 1976-80. To reduce the demand for imported feed all countries have scaled down targets for livestock production. This policy change has been forced on some countries such as Poland where a shortage of imported feed has virtually shut down the broiler industry. Also, the hog population has continued to fall and is now 2 percent lower than October 1981. On the

other extreme, Czechoslovak officials have implemented a voluntary reduction in hog numbers of approximately 10 percent over year-earlier figures. Officials hope to increase production of forages and shift holdings from the heavy concentrate-using hogs to cattle. It is thought that Czechoslovakia can achieve grain self-sufficiency soon at a lower consumption level. Likewise Romania, if contented with modest growth, is not far from self-sufficiency. It is currently estimated that a one and four percent decline in cattle and hog numbers in Eastern Europe, respectively, are likely this year. Cattle holding should decline significantly in Poland and hog numbers down most in Poland and Czechoslovakia.

Decreases Likely in Meat Consumption

With lower animal inventories and no improvement foreseen in slaughter weights, per capita meat consumption in 1983 will decline or at best remain stable. Consumption should suffer from the continuation of general food rationing in Poland and Romania and from recently announced retail price increases in all countries except the GDR. These price increases were substantial, especially in Poland where some staple meat prices rose 375 percent.

Per capita meat consumption will continue to fall in Poland to an estimated 52-53 kg. compared with a probable 57 kg. this year and 74 kg. in 1980. Czechoslovak officials have planned a decrease in consumption this year to 80 kg. from 85 kg. per capita in 1982. Little improvement is expected in 1983.

1982/83 Crop Output Mixed

Domestic East European grain supplies will be much-improved over last year with production estimated to approach a record 100 million tons. Both wheat and coarse grain harvests are above last year's results. However, most other crops did not fare as well. Oilseed production is down 7 percent to 3.6 million tons. Sugar beet and potato output are also down. The shortfall in potatoes is especially severe in Poland where production of this important livestock feed fell 10 million tons to 33 million tons. This would indicate the third disappointing potato harvest in a row. Hay and forage output was mixed as dry summer weather reduced yields in several countries.

Although lower livestock inventories will reduce 1982/83 feed requirements, this year's record grain crop is still inadequate to cover the shortfalls in nongrain feed production. For example, total Polish domestic 1982/83 feed supplies, in oat unit equivalents, are estimated to be down 6-9 percent compared to 1981/82.

Only Marginal Improvement Expected in Credit Availability

With domestic feed production still below requirements, credit availability will determine the overall level of East European agricultural imports in 1983. The credit outlook remains poor, although slightly better than in recent months. Under the 1982 commercial debt rescheduling agreement, Poland should receive approximately \$550 million in new short term credit from its lenders in 1983. The U.S. share of

this new credit is estimated at between \$50-\$70 million. Polish officials have stated that the majority of this credit will be spent on U.S. farm imports. Also, Yugoslavia was recently granted a CCC blended credit valued at \$60 million for the purchase of cotton. This credit represents purely additional sales for the United States as Yugoslavia has been a marginal importer of U.S. cotton for years. However, these are isolated instances and do not signify a return to past levels of lending in Eastern Europe.

Outlook for U.S. Agricultural Exports Poor

The lack of credit combined with lower growth in the livestock sector and 1982's record grain harvest will keep 1983 U.S. agricultural exports to Eastern Europe low. Grain exports should be especially hard hit as officials adjust herd numbers to match domestic grain and forage availability. Exports of soybeans and soybean meal may fare better as the East European capability for protein feed production is well below demand.

U.S. agricultural exports to Eastern Europe for FY 1983 are estimated at \$960 million, only slightly above the depressed FY 1982 level. Grain imports, primarily corn, from the U.S. should be just under 4 million tons, down from last year's 4.3 million tons, and the lowest level in many years. Total grain imports by Eastern Europe are forecast at 9.4 million tons in 1982/83, down from an estimated 13.3 million tons in 1981/82.

However, soybean and soybean meal imports from the United States are estimated to increase in FY 1983. The region's lower oilseed crop and the preference in most countries to maintain adequate protein rations for livestock should result in imports of approximately 575,000 tons of U.S. soybeans and 650,000 tons of U.S. soybean meal in FY 1983. Total 1983 soybean imports are estimated at 1.3 million tons, up 33 percent from this year, although estimated soybean meal imports, at 3.3 million tons, will be down slightly from this year's expected level.

Several factors may alter these early U.S. export estimates, the most important being CCC credit availability. Currently, only Hungary, Romania and Yugoslavia are eligible for credits. Poland lost its eligibility following USG suspension of its most-favored-nation tariff treatment. It is expected that Yugoslavia will be requesting further CCC credits in addition to the \$60 million blended authorization. Without such credits, the U.S. share of a shrinking East European market could be even lower.

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Along with the rapid growth of agricultural production since 1978, the People's Republic of China has also increased imports of U.S. grains, cotton, and soybeans. However, this upward trend in U.S. exports will not continue in the next few years. The growth of China's grain imports has slowed. Imports of cotton and soybeans have acutally dropped and are not likely to recover quickly because of the success of China's farm programs.

Between 1977 and 1981, China's imports of farm products increased from \$1.9 to an estimated \$5.3 billion. Larger imports of both grain and cotton contributed to most of the increase. Grain imports rose from 6.8 million tons in marketing year 1977/78 to 14.5 million tons in 1981/82 and are expected to reach 16 million tons in 1982/83. Wheat has accounted for most of the increase in imports; coarse grain imports rose to a record 3 million tons in 1978/79 but have since declined. Imports in 1981/82 totalled only about 1.3 million tons although they may reach 2 million tons this year.

Higher grain imports have been caused by both rising incomes and policies favoring specialization. Greater incomes in both urban and rural areas have pushed up demand for higher quality grains such

Table 1-- Output of major farm products, 1970-82 ^{1/}

Item	1970	1975	1977	1978	1979	1980	1981	1982
	million tons							
Total grain ^{2/}	240.0	284.5	282.7	304.8	332.1	320.5	325.0	335.0
Wheat	29.2	45.3	41.1	53.8	62.7	54.2	58.5	59.5
Rice	110.0	125.6	128.6	136.9	143.8	139.3	143.2	146.5
Cotton	2.3	2.4	2.0	2.2	2.2	2.7	3.0	3.3
Oilseeds ^{3/}	17.0	16.0	14.7	16.4	17.4	20.2	24.3	26.1
Sugar crops	15.5	19.1	20.2	23.8	24.6	29.1	36.0	39.0
Tobacco	N/A	N/A	1.1	1.2	.9	.9	1.3	2.0
Meat ^{4/}	6.0	8.0	7.8	8.6	10.6	12.1	12.6	N/A

N/A = not available.

^{1/} Except for 1982, data are drawn from various State Statistical Bureau reports. The 1982 figures for wheat, rice, cotton, and oilseeds are November 1982 U.S. Department of Agriculture estimates.

^{2/} The Chinese definition--wheat, rice, coarse grains, other miscellaneous grains, tubers, and soybeans.

^{3/} Soybeans, cottonseed, rapeseed, peanuts, and sunflowerseed.

^{4/} Pork, beef, mutton, and lamb.

as wheat and rice. At the same time government procurements of grain from the countryside have increased very little. On top of this, the government has been transferring a greater share of grain that it does procure back to the rural areas as part of the incentive program to encourage farmers to shift land and resources to producing cash crops. This has further increased shortfalls in the urban areas. These two factors have combined to increase import demand for grain, particularly wheat, despite the growth of China's grain production.

While grain imports have been rising, the dramatic growth of cash crop production has reduced import demand for crops such as

cotton and oilseeds. Cotton imports, which rose to a record 849,000 tons in marketing year 1979/80, fell to 566,000 tons in 1981/82 and a further sharp decline to 280,000 tons is projected for 1982/83. Imports of soybeans and soybean oil have been similarly affected. Soybean imports reached a peak of 810,000 tons in 1979/80 but have since fallen off -- imports in 1982/83 are expected to total only about 400,000 tons. Soybean oil, imports of which equalled or exceeded 100,000 tons in 1979/80 and earlier years as China tried to alleviate a serious shortage of vegetable oils, fell to only 25,000 tons in 1981/82 and no imports are expected in 1982/83.

This pattern of trade is indicative of a policy of import substitution, in which larger imports of grain are being used to permit reductions in imports of other agricultural products. The larger grain imports free domestically-procured grain for transfer to areas which are expanding cash crop production, and are viewed as a necessary cost of reducing imports of other agricultural products. China's foreign trade policy, despite the cutback of imports of industrial goods during the current readjustment period, appears aimed at limiting growth of agricultural imports, leaving foreign exchange free for purchases of nonagricultural products.

A cautious approach to imports is also evident in the livestock sector. Although policies announced in 1977 and 1978 envisioned rapid development of livestock production in and around urban areas and, by implication, rapid growth of grain-intensive feeding operations, the policies in place since 1979 have been much more cautious. Present policy favors a more balanced approach with simultaneous development of range-fed cattle, sheep, and goats

together with a modest expansion of concentrated feeding operations in and around the large cities. This approach has slowed the growth of demand for animal feed. One of the reasons for this change was to prevent the rapid growth of import demand for livestock feed. Another reason was recognition of the problems involved in quickly transferring hog and poultry production out of the private sector. Such a shift requires building an extensive infrastructure for feed production and distribution, veterinary services, slaughtering, cold storage, and marketing.

Some of the coarse grains China now imports are being used for feed, but an important part is likely still used for human consumption, and part of this year's increase in projected import levels is due to shifts from wheat to corn because of low corn prices. China has also begun to import small amounts of malting barley for use in brewing.

This pattern of rising grain imports and falling imports of other farm products is evident in U.S. agricultural exports to China. From 1977 to 1980, U.S. agricultural exports to China increased from \$66 million to \$2.3 billion. Over this period shipments of both grain and cotton rose sharply, reaching a combined total of \$2.0 billion in 1980. Shipments of soybeans and soybean oil also grew to \$226 million in 1980. Wheat shipments continued to increase in 1981, following the signing of the Sino-U.S. grain agreement in October 1980. But U.S. exports of cotton, soybeans, and soybean oil tailed off as China reduced purchases of these items and total U.S. exports of farm products to China dropped 13 percent to \$2 billion. A further decline to about \$1.5 billion is expected this year because of both lower prices for exports and further cuts

in China's purchases of U.S. cotton.

Table 2-- U.S. agricultural exports to China by fiscal year

Item	1977/78	1978/79	1979/80	1980/81	1981/82
----- m. tons -----					
Wheat	1.05	2.68	4.15	7.96	8.22
Corn	--	2.75	1.79	.73	1.12
Soybeans	.06	.14	.81	.47	.37
Cotton	.11	.14	.51	.25	.19
Soybean oil	.11	.06	.10	.26	--
----- m. \$ -----					
Wheat	133.8	357.0	691.7	1420.3	1268.1
Corn	--	291.6	225.5	108.9	138.7
Cattle hides	.2	--	8.0	5.1	13.2
Soybeans	16.3	37.8	200.7	136.4	95.3
Cotton	150.9	193.5	754.5	481.4	292.4
Tallow	14.2	.6	16.0	6.3	7.0
Soybean oil	54.4	35.9	56.3	17.1	--
Other	.3	.8	4.3	8.3	4.3
Total	370.1	917.2	1957.0	2183.8	1819.0

The production levels achieved by China in the last several years are less striking when viewed in a longer-run perspective. Growth of crop production since the mid-fifties has averaged only about 0.6 percent per year, with most of the growth coming in the last several years. As recently as 1977, aggregate production of major crops on a per capita basis was no higher than it had been during the mid-fifties, despite rapid growth of modern inputs such as irrigation and fertilizer supplies and extensive introduction of new varieties of major crops such as wheat and rice. For the last several years, therefore, China has been playing catchup -- making substantial gains by utilizing surplus production capacity created

by inefficient and wasteful policies of the Cultural Revolution period. These high growth rates cannot be sustained for an extended period of time.

Looking ahead to the next several years, growth rates are likely to slow. Inputs are certain to grow more slowly. The rapid rise in supplies of chemical fertilizers has ended, no further large increases in irrigated area are in sight, and large increases in production of agricultural machinery are neither in sight nor would they offer the prospect of major gains in production if they could be achieved.

This slowdown in input growth means that future increases in crop production will have to largely come from greater efficiency in using existing inputs. Considerable latitude for gains in efficiency does exist. For example, chemical fertilizers are often used wastefully and nutrients are lost through volatilization before they have their full effect on crops. More efficient utilization could increase effective nutrient supplies. Better management of existing irrigation systems could also have a positive impact on yields.

These sources of growth, while potentially substantial, place a premium on continued flexible policies for agriculture, a predominant role for the local levels in making decisions about cropping patterns and techniques, and continuing improvement in management at the local level. This means that reassertion of strong central controls over agriculture and restricting local choice in questions of cropping patterns is likely to have a serious negative impact on the growth of production.

Continued technological progress and effective dissemination of

new technology will also be crucial to agricultural progress. Given the severe impact of the Cultural Revolution on China's agricultural research capabilities, China is facing an extended period of difficulty as research and extension capabilities are rebuilt. Expanded exchanges of technology with the West and greater opportunities for Chinese scientists to work with their foreign counterparts will be an essential ingredient in maintaining the recent momentum of agricultural progress, as will the continuation of China's recent efforts to expand the agricultural education system.

The implication of the slowing pace of input growth seems clear: China will have to continue the relaxed agricultural policies of the past several years and continue its more open approach to international contacts if the momentum of agricultural growth of the last several years is to be maintained. If this can be done, then yields should continue to rise, although at rates generally below those of the recent past.

Agricultural imports are not likely to grow dramatically in the next several years, particularly if China is successful in generating moderate growth of farm production. The annual level of grain imports may gradually increase, with continued growth of demand in the import-dependent urban areas and gradual expansion of the livestock sector in the same areas. There is likely to be no immediate reversal of the recent slump in imports of other farm commodities, as long as production of cash crops such as oilseeds and cotton make modest gains. An important variable in this picture, however, is what happens to acreage of cash crops. The

Government is stressing that the contraction of grain area must stop and that future gains in production of cash crops will have to come from higher yields. Whether the Government will be able to halt this decline is far from certain, however. Continued decline in grain area would tend to increase grain import requirements by more than would otherwise be the case. However, it would also lead to even lower imports of non-grain commodities.

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An annual outlook conference of the U.S. Department of Agriculture (USDA) is in fact a long-term market information service. An important part of my area of responsibility in this Administration is market information services. Therefore, I feel at home participating in Outlook '83.

I think of government marketing services as those services supplied by government for the purpose of improving the efficiency of markets for agricultural products. This is in contrast to market action programs in which government performs marketing functions such as buying, transporting, storing, processing or financing products in market channels. The principal purpose of the seven USDA agencies for which I am responsible is to provide marketing services which are covered by that definition.

It is useful to distinguish between two primary types of marketing services performed by the USDA; those which contribute to market development, and those which contribute to improved market exchange processes. Market development services of the USDA include research and development, educational, and advisory activities designed to enable States, local governments, producers and marketing firms; acting individually or jointly; to be more effective in deciding which market functions to perform and how to perform them. The Office of Transportation (OT) and the Agricultural Cooperative Service (ACS) provide market development services. Other agencies of the USDA also provide one or more market development services as a part of broader research and development, educational, or advisory activities.

Marketing services of the USDA which improve exchange processes consist of activities designed to enhance the ability of individuals and firms trading in a market to negotiate mutually advantageous contracts for the transfer of property rights in agricultural products as they move, stage-by-stage, from the producer to the consumer or other end user. Improved exchange processes improve overall efficiency of the market.

Exchange process improving services may be divided into regulatory and trader information services. A regulatory service sets the parameters by which firms trading in a particular product may perform certain functions. Those parameters provide others who trade in a particular product with improved knowledge about its attributes, about trade practices of the regulated firms, or about competitive conditions in markets in which regulated firms trade. Inspection activities of the Food Safety and Inspection Service (FSIS) and of the Agricultural Marketing Service (AMS) require that products traded by processors of red meats and their products, poultry and their products, and eggs and their products satisfy

wholesomeness standards. Inspection activities of the Animal and Plant Health Inspection Service (APHIS) require that products traded be free from designated diseases and pests. Activities of the Packers and Stockyards Administration (P&SA) impose trade practice and competitive performance requirements on those who trade in livestock, meat, poultry and poultry products. Activities of AMS impose trade practice requirements on handlers of fruits and vegetables. Those are the principal regulatory marketing services of USDA.

A trader information service provides traders of a particular product in a particular locational market with information about value determining attributes of those units of the product being exchanged, or about value determining market conditions. Both types of information assist traders to agree more readily and precisely on terms of exchange which are mutually advantageous. Standardization and grading activities of AMS and Federal Grain Inspection Service (FGIS), weighing activities of FGIS, and market news and warehouse inspection activities of AMS are the principal trader information services of the USDA.

Administration's General Policy on Marketing Services

When initiated, each marketing service now being performed by USDA was generally believed to be a justified government activity. It was also believed that the funding source was appropriate, that the particular service being provided was the best among available alternatives, and that the service was being performed in an effective and efficient way. Since the initiation of those services, there have been major changes in the taxpayer's ability to support government services, in social priorities, in technology available for rendering marketing services, in the effects of different marketing services on market efficiency, and in market incentives for private enterprises to use and to perform marketing services. Therefore, in the past 22 months, the Administration has begun a review of the principal marketing services provided by USDA to determine whether they are justified; and for each which is justified, to determine the appropriate funding source. We have implemented some changes which we considered to be clearly justified.

The principal change which we have made is to move toward a uniform policy of charging users of all grading services and special market news services for full costs associated with rendering those services, and toward a uniform definition of what constitutes full costs. As you would expect, publicity has focused primarily on commodities where special statutes have historically required that those services be made available free.

Relatively little attention has been given the large number of cases in which user fees have always been collected without fanfare and with active cooperation and support from industry.

In general, we have been pleased by progress made in moving toward uniform user fee procedures for all commodities, although there are additional adjustments to be made. We have been particularly pleased by a

predominantly positive attitude on the part of affected commodity interest groups. However, one unwarranted by-product of the publicity engendered by changes in user fee funding has been concern in industry that this Administration has a negative attitude toward marketing service programs. I want to assure you that that is not the case. We do believe that it is incumbent upon us as responsible public servants to pursue a policy which will insure that, in-so-far as possible, each USDA marketing service is a justified government activity, that all marketing services are the best that can be provided, and that all marketing services are performed efficiently.

Policy on Determining Whether a Service Is Justified and How to Fund It

The theoretical conditions which must be met in order for a marketing service to be justified are:

- (1) Total benefits received by all beneficiaries must equal or exceed total costs of rendering the service.
- (2) The service would not be rendered by private entrepreneurs in the absence of the government activity.

The latter condition is imposed because private enterprise is generally more efficient than public enterprise; unless there are special conditions which prevent market incentives from working; and because the existence of a government enterprise which provides a market service may prevent market incentives from working.

Ideally, we would like objective, practical tests for determining whether both those conditions are satisfied for each of the several types of services which I defined earlier. As indicated, we have been using one such test to determine whether grading and special market news services satisfy the condition that total benefits exceed total costs. That test might be called a market survival test. It consists of charging users of a service a fee which is large enough that total revenue exceeds full costs of providing the service, including costs of collecting the fee. If those paying customers continue to buy the service, then it demonstrates that total benefits equal or exceed full costs and, therefore, that the service is justified. This test also has the advantage that an affirmative test simultaneously answers the question of how to fund the service.

Standardization and Grading Services - Our policy is that, as a general rule, Federal grading services are justified only if they satisfy the market survival test. We arrived at this view on the basis of our observation that, in most instances, there are relatively few benefits to the public at large which are not appropriated by an identifiable group of users. We recognize that there are some difficulties in deciding whether administrative, supervisory and support costs should be included in full costs, and in deciding how much of those costs should be charged to a particular service. However, the magnitude of costs which require allocation are usually small relative to total direct costs, and acceptable guides to allocating those costs are available.

Our policy on how to determine whether maintenance of a grade standard is justified and how to fund those activities is more complex. If there are numerous users of a product standard other than a related Federal grading service, or if there is not a Federal grading service, it is not possible to obtain full cost funding for the standardization activity through a user fee. Therefore, if grade standards are to be maintained for such a product, the costs must be partially or totally funded from appropriations. We do believe that in many such instances, benefits to the public at large from maintaining standards in currently useful form do exceed full cost of the services. Therefore, it is our policy to develop an effective review procedure for determining whether the maintenance of standards for each such product is justified, and the extent to which costs might be recovered through a user fee.

In those instances in which the sole or dominant user of standards for a particular commodity or product is a related Federal grading service, it is our policy that costs of maintaining that standard should be included as a part of the direct costs of rendering the grading service. In such instances, the market survival test for the related Federal grading service will also determine whether the standardization service should be continued.

Market News Services - Federal market news is readily and widely dispersed among the public by a variety of private communications systems. Moreover, there is a wide variety of private and State market news sources from which users of Federal market news receive similar information. For these reasons, it is difficult to identify users who receive special benefits from a Federal market news service. Further, if benefitted users were identified, in most instances they are so widely dispersed and benefits to individual recipients are so small that user fee collection costs would be prohibitive. Therefore, it is generally necessary for total costs of a public market news service to be funded from appropriations. The only exception is when a well identified group wishes to receive market news in a form or by a method of communication which differs from forms or methods used for general public dissemination. In those instances, it is our policy to collect a user fee which covers added costs of rendering the special service.

In the absence of a useful market survival test, a more-or-less subjective judgement must be made as to whether particular market news services are justified. It is our policy to work toward the development of evaluation techniques which will assure that decisions to fund are based on an informed judgement.

Regulatory Services - At this time, our policy is to continue essentially full-cost general revenue funding of all USDA regulatory services. There are four distinctly different reasons for this policy. First, benefits are frequently so widely distributed as to make them essentially general public benefits. Second, for many of the services, user fee collection costs would be prohibitive. Third, existing statutes provide for general revenue funding for most other similar Federal regulatory services. Fourth, general public support for the regulatory services is typically strong, reflecting a widely held perception that they are appropriate roles for the Federal Government. That perception is reflected in the mandatory nature of the regulatory services.

We do believe that in the future, careful consideration should be given the possibility that it would be appropriate to finance some of the regulatory services with full-cost user fees. Such would be the case even though the ultimate benefits of a regulation accrued in small individual amounts to a large number of beneficiaries, if individual traders were able to pass a full-cost recovery user fee on through market channels to those beneficiaries, and to do so at a relatively small cost

Market Development Services - The distribution of benefits from market development services is typically such that user fee collection costs would be prohibitive. Therefore, justified services must be funded from appropriations. As in the case with market new services, it is our policy to improve evaluation techniques for market development services so that funding decisions can be based on informed judgement.

Choice of Marketing Services and Performance Efficiency

Costs and benefits from a marketing service depend critically upon the choice of the particular service rendered and the efficiency with which the service is performed. For example, a grading service might pass or fail a market survival test depending upon the points in the market at which the service is offered or upon the standards used, and upon the method used to provide the service. Our Service administrators are aggressively pursuing management techniques which will help to insure that overall program efficiency is promoted in each of the two areas suggested by this example.

We believe that four types of change will be particularly important in maintaining overall efficiency of marketing service programs. The first is amendment or revision of grade standards to better reflect current market structure, market practices, trader and consumer preferences, and commodity or product characteristics. The second is the development, adaptation and adoption of more efficient and effective methods of grading and inspecting products, including instrument grading, instrument inspection, and partial inspection or the regulation of performance standards by sample inspection.

The third type of change is the development, adaptation and adoption of more efficient and more effective methods of acquiring and disseminating market news. The fourth is the development of improved methods of selecting markets to be reported.

A Final Observation

When we shift a grading service from appropriations to user fee funding, the need to survive in the marketplace has a positive effect on attitudes and performance of program personnel. That effect is a clear reminder that a market economy is a marvelous social instrument.

Vern Highley
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When it comes to the whims of Mother Nature, farming hasn't changed much through the centuries. Her moods are still at the top of every farmer's list of risks. That list has dwindled in some ways and grown in others, but farmers are still at the mercy of the weather.

How do you plan on a spring drouth followed by untimely freezing temperatures, hail and then 30 inches of rain in a 6 week period, not to mention high winds at planting time and on into the early growing season? Such was the luck of the cotton, wheat and feed grain producers in West Texas, Oklahoma and New Mexico earlier this year. For cotton alone, an estimated 2.5 million bales of the normal crop were wiped out.

The weather is not something you put stock in any more than you can forecast an international occurrence which may lead to a reduction in demand for U.S. agricultural products.

Farmers can guard against some of the natural hazards which only a generation ago plagued our agriculture. Plant and animal scientists have made great strides, giving our farmers an arsenal of medicines, chemicals and cultural practices to protect plants and animals from disease. But high risk remains.

Modern farmers also have to contend with a number of "man made" risks, namely the hazards of dealing with a complicated marketing system. For example, a farmer has to be aware of the possibility of product spoilage, seeing to it that his produce reaches its distant selling point in good condition. The knowledgeable producer does his best to protect against selling his goods at discounted prices by making sure the right harvesting techniques are used and the most efficient modes of transportation are chosen. Of course, there's always a risk factor here; but the astute farmer can lower the odds and make his prospects a safer bet.

Another risk inherent in the marketing system is the possibility of unanticipated price declines. Farmers, like any other business people, have to plan ahead. They ascertain what prices they expect to prevail and try to figure out what they can sell the next year. Relative to anticipated costs, if the prices are high enough to warrant expanding production, many do so. But what happens if a large number of producers of a given commodity independently make the decision to increase production and there's no growth in demand? To the extent the system is sensitive to supply shifts, prices will decline.

Of course some commodity prices are more sensitive to shifts in supply than others. and farmers must take that into account. To protect themselves, they also must consider the possibilities of storing their commodity, or hedging, or forward contracting so they can lessen the impact of what can only be described as the natural healthy and efficient operation of the free market system. They can use a variety of marketing techniques which are the culmination of decades of trial and error. Marketing orders, cooperative pools and various other tools permit farmers to expand their marketing options, thereby decreasing risk.

That's not to say that the marketing system always functions efficiently and equitably. When it doesn't succeed, marketing agents at all levels, from the farmers on may not receive their fair share of the value of their product.

This situation presents risks of a different sort. And in no way does the situation reflect on the management skills of our farm population. In fact, as the production potential of land and machinery has increased in the last 20 years, farmers' business skills have not only kept pace, they have led the way.

We rely on those skills, even taking them for granted while much of the rest of the world waits to buy our overflow to meet their needs for food and clothing. Above all others, our farmers are our nation's most valuable resource.

But are their prodigious skills sufficient to cope with the risks produced by a marketing system which doesn't always operate efficiently and equitably?

Two things must be kept in mind when trying to answer that question:

First, efficiency is an ideal we seek; but we will never be entirely satisfied with the end results. The marketing system is not something that can be fully and finally pinned down as in some laboratory experiment. It's constantly changing and being changed, so a certain amount of inefficiency associated with the process of adjustment is unavoidable.

Second, agriculture remains fundamentally different from all other industries. It isn't just a handful of corporations responding practically as one to a given economic stimulus. Agriculture is a multitude of individual business people running more than 2.4 million farms and deciding independently what goods to produce and how to go about it.

Further, it's in the nature of our current agricultural industry that there are relatively fewer buyers than sellers. That fact gives the buyers of raw agricultural products more market power than the sellers. Most buyers have alternate sources of supply and greater flexibility in the bargaining process than farmers. Farmers, by themselves, can only partially insure against losses when bargaining from a relatively less powerful position.

Beyond the level of the farmers, market participants at each stage of marketing activity can take steps to reduce the cost of negotiating sales. They can internalize or combine production and marketing stages within the firm. For example, a meat packer who owns a feedlot is spared the costs of locating suitable animals and negotiating terms of trade with another firm.

Market participants who choose not to integrate activities can utilize auxiliary marketing services which contribute to the integrity of bargaining. They can hire official graders to evaluate the quality of products which they may purchase or sell. Since graders' evaluations will be based on well-developed, easily understood and widely disseminated standards, market participants can have confidence that products described according to the standards will be accurately represented in the market place.

What about the role of the federal government in these efforts to reduce the risks entailed in marketing?

The U.S. Department of Agriculture has provided marketing services to the agriculture and food system for many years. These services exist for the purpose of enhancing the efficient movement of products through the system. Many changes in the government role have occurred over the years. And there will be many more changes if we are to say that government continues to be responsive to the needs of its people.

There is no status quo when it comes to the marketing system. Continuous improvements and innovations for this system will be crucial if we are to meet increasing demands for food and fiber and, at the same time, assure our farmers a fair return for their efforts.

As an example of a service provided by government through the Agricultural Marketing Service, the closely related functions of grading, inspection and certification have been singled out for discussion here because of all the other valuable federal marketing services, these seem to have a most direct and identifiable effect on nearly every level of the marketing system. Moreover, the grading services for grain, cotton and tobacco are in an interesting transitional phase. As of this year, they are being financed by the private sector rather than by government tax revenues.

This shift is consistent with the philosophy that government should provide only those services which it can best perform. And those services should be paid for by those who use them. This philosophy is now thoroughgoing, but it is not a new way of doing business for federal marketing services. In fact, the most compelling evidence of the confidence and trust people have in these services is that thousands of people have been willing to pay for such government expertise for many years. Why? Because, among other things, these services help to reduce risks in the marketing process.

The official grading, inspection and certification services identify products in ways that are meaningful to buyers and sellers. They play a complementary role and are functionally related in the marketing network. They facilitate contracts and agreements which may be used in the negotiating process. Specialized trading arrangements become more effective as product descriptions are standardized in ways that are acceptable to all.

Across the board, the harmonious interaction between federally provided services and the agricultural marketing system has made it possible for those who trade in commodities to have faith in USDA product descriptions. Since grading, classification and inspection provide special benefits to identifiable persons, in all but a few cases, those who have requested such services have borne the bulk of the costs associated with their performance.

In fact, the Agricultural Marketing Act of 1946 directs and authorizes the Secretary to develop and improve commodity and product standards. The Act further authorizes that the inspection, certification and identification of quality factors may be put into effect through rules and regulations. The assessment and collection of reasonable fees to cover the cost of these services are also provided for under the Act.

USDA has provided grading services for the following foods under the Agricultural Marketing Act: Meat, dairy products, poultry products, as well as fruits, nuts and vegetables, both fresh and processed. Of the approximate delivery costs of \$63 million during fiscal year 1980, 96 percent was borne by individuals within the industry requesting food grading services from USDA. Nearly all of the turkeys produced that year, approximately three-fourths of the broilers and lamb, and more than half of the butter, beef, nonfat dry milk, fresh and frozen fruits and vegetables and certain grains and grain products (not covered by the U.S. Grain Standards Act) were federally graded.

In addition to services associated with food, USDA's Federal Grain Inspection Service provides inspection and weighing for grain. And the Agricultural Marketing Service handles inspection, grading and classification for cotton and tobacco. It is these three commodity areas which have been most affected by the recent extension of user fees.

These programs are conducted under the authority of specific statutes. Because the language of the U.S. Grain Standards Act, the 1937 Smith-Doxey Amendment to the Cotton Statistics and Estimates Act, and the 1935 Tobacco Inspection Act, provides for significant levels of appropriation funding, users have contributed relatively less to the cost of delivering these services until recently. Cost sharing by industry ranged from less than 10 percent to a high of 58 percent of cotton classing, tobacco inspection, grain trading and inspection during fiscal year 1980.

The Grain Standards Act as amended in 1977, permitted fees to be collected for a portion of the costs associated with official inspection by USDA. However, the recovery of administrative and supervisory costs was forbidden. The law itself as well as the legislative history surrounding its passage doesn't make clear the kind of costs Congress intended to except from user fees. The rationale for excluding administrative and supervisory costs is apparent though, because history indicates that Congress was apprehensive regarding lower farm level grain prices if grain merchants were charged higher fees for USDA inspection and weighing. Congress' desire to exercise oversight responsibilities which accompany appropriated activities is also clear from the discussion surrounding the 1977 amendments.

Through fiscal year 1981, the Federal Grain Inspection Service carried out grain inspection and weighing services under these provisions of the U.S. Grain Standards Act. However, the President's 1982 budget submission to Congress included proposed legislation to allow for the full recovery of supervisory and headquarters costs associated with grain inspection and weighing. Standardization costs resulting from the development and maintenance of official grade standards was to remain an appropriated activity--as would federal state and private agency compliance with the U.S. Grain Standards Act and regulations under the Act. Full cost recovery made this program consistent with similar USDA activities carried out under the authority of the Agricultural Marketing Act.

Until the end of FY 1981, the cotton industry only paid for cotton classing for delivery on futures contracts, grading requested by non-growers, and the sale of cotton standards. Receipts from these activities were deposited in the U.S. Treasury.

However, under the Smith-Doxey Amendment to the Cotton Statistics and Estimates Act, USDA provided free cotton classing services to all growers upon request. Free services were designed to enhance the cotton quality in response to guidance by the cotton improvement groups and to provide producers with information which would improve their market position with buyers.

Recently, it was determined that since improvement programs have been successful in raising cotton quality, it is less necessary to fund cotton classing through treasury revenues. Hence, recovery of costs associated with cotton classing, standards and related services furnished by USDA was enacted as part of the the President's 1982 budget. During FY 1982, fees generated from cotton classing, including fees and licenses issued to classifiers, as well as the cost for establishing standards and sales of copies of standards amounted to approximately \$10.8 million.

From October of 1977 through 1980, appropriations for federal service to the cotton industry contributed between 88 and 97 percent of the budget for the AMS division which delivers these services. In contrast, appropriations amounted to less than 20 percent in FY 1982 and are expected to remain at that level in 1983.

Beginning with the 1981 crop, two separate funds were established for the collection of fees for service. The first was reserved for testing of the grading service and receipts from sales of samples submitted for grading by growers. The second fund was to provide for retention of money received from grading for futures delivery and sales of cotton standards (physical specimens of cotton used as benchmarks for quality evaluation). Grading at the producer level contributes approximately 80 percent of the total USDA cotton unit's operating budget. Futures and other specially requested classing together provide approximately 5 percent; sales of standards are in about the same proportion.

Regarding tobacco, in the fear that producer profits would be curtailed by the pervasive taxation of consumer tobacco products, Congress determined that tobacco would be graded at no charge to the industry. However, in point of fact, as tobacco taxes have risen over the years, consumption of tobacco products has also risen. As a result of this observation, the President's 1982 budget contained a provision for full cost recovery of tobacco inspection. The program received \$9.8 million from users of the service during FY 1982.

From FY 1978 through 1981, appropriations covered approximately 90 percent of tobacco standardization and grading activities. From 1935 until October of 1982, tobacco inspection at designated markets was provided to growers free of charge; costs of grading at non-designated markets were reimbursed. In recent years, with average tobacco crops pegged at 2 billion pounds per year, 95 percent of that tobacco was sold and graded at designated auction markets. (USDA grading on tobacco sold at designated markets is mandatory.)

As with cotton classing, receipts from tobacco inspection were deposited in the U.S. Treasury. Standardization work and market scheduling were financed by taxpayers. As of October 1, 1981, standardization was the only activity partially supported by appropriations. Users now bear the full costs of all other marketing services.

Full cost recovery for all federal grading services is now a fact of life. The changes for grain, cotton and tobacco brought all of the commodity groups into line. These changes came rapidly, but they were not all that surprising.

For a long time, USDA has believed that all commodity groups should be treated equally. Twenty-seven years ago, a letter from then Secretary of Agriculture Orville Freeman was sent to the 89th Congress, proposing user funding for grain, cotton and tobacco. Legislation supported by USDA was introduced in the 90th and 91st Congress. On several occasions since 1970, the Department has taken steps to place these programs on a cost recovery basis.

More than thirty years ago, the predecessor to the present Office of Management and Budget established user charge policies for all executive agencies, directing that "a charge which recovers the full cost to the federal government should be imposed for a service (or privilege) which provides special benefits to an identifiable recipient above and beyond those which accrue to the public at large."

However, not until more than thirty years later did the Congress agree to require all beneficiaries of USDA grading programs to pay for services received, irrespective of the commodity. We believe that the present cost recovery system is the equitable way of doing business.

Of course, we are still in the throes of transition. The older programs--involving fruit, vegetable, meat and poultry grading--have grown gradually over the years, paralleling the changes in agriculture and the marketing system. Government and industry had time to adjust to those changes. Such was not the case for grain, cotton and tobacco activities which were operating at a vigorous level when the method of funding changed. The abrupt shift from appropriated public funds to private user fees accelerated the operational problems for these programs. Fortunately, our older programs have provided valuable experience to ease the transition pains. And that will help.

We want to continue to administer user fee grading programs at the lowest possible cost to industry, with the highest level of fairness and the least amount of adjustment pain for everyone. We would like to share some of our recent experiences. And we have a great deal of information to draw upon from all of our programs. A frank discussion of the perplexing questions which confront government and industry can lead to better user-supported services for industry.

As different as the commodities and the programs to service them may be, there seem to be three problem areas, shared to varying degrees, in all the user fee grading programs.

First: How does USDA estimate demand for services which have either been provided free or at less than market prices when there is little or no information about the willingness of individuals to pay?

Second: How does USDA estimate future costs of delivering varying levels of service?

Third: What level of service will the industry demand next year?

We have fewer problems answering the first question in programs in which there is significant history. That, of course, excludes grain, cotton and tobacco where substantial problems exist.

Cost estimation is approached from many angles according to the commodity program and industry structure. This exercise leads to an examination of alternative ways of doing business which are designed to result in the lowest unit costs possible. In fact, the unit of interest in cost determination varies across commodities and may change for a given commodity over time.

In our grower cotton and mandatory tobacco grading programs, we presently feel that cost per unit of commodity evaluated (per bale, per pound) is appropriate. However, we are aware that our costs increase as the range of commodity quality grows. If the cost differences are significant, cost per unit may not be an appropriate basis for fees. Hourly charges per diem and travel allowances are imposed for permissive tobacco grading. Hourly fees for original inspection of grain were established in 1976; a switch to volume unit billing occurred in 1978; and hourly billing was restored at the end of 1979.

We also know that if we must incur the costs of stationing a grading team, irrespective of the level of grading activity, it is likely that all are not charging according to our costs to the extent that people are under utilized. Variations in commodity quality and high fixed costs under conditions of low resource utilization are only two examples of the cost issues which confront us.

Finally, turning to the third question, how can we determine what level of service industry will require next year? Here too, the factors considered vary with the commodity. For grain, one would like to know how much grain will be exported as a guide to activity. And the expected size of the cotton and tobacco crops are integral to a determination of resource needs for these grading services.

These are perplexing questions, but they're not the only ones. We're also wondering how the changes in the programs will affect agricultural marketing efficiency in general...will total user support affect the rate of development for objective measurement devices for commodity grading...what level of flexibility will be required...what technical changes need to be made to serve industry at the lowest possible cost...what kind of exchange between industry and government is best.

These questions can't be answered by government alone. Neither can they be answered by industry alone. The rapid transition to user fees has required and will continue to require us all to improve our dialogue.

To that end, the National Tobacco Advisory Committee was established in October 1982, for the purpose of informing the Secretary of Agriculture what level of services are likely to be required for the next year. The grain and cotton industries also contribute resources to groups which exist to enhance and clarify the dialogue between themselves and USDA. We expect to see greater acceptance and appreciation of committees such as

these as they work to achieve the appropriate balance between public and private provision of marketing services in the future.

Today more than ever, we need objective third party commodity evaluation as we look at the trend toward decentralization in agricultural marketing. Formula and forward pricing rely on appropriate product descriptions to maintain integrity. Electronic marketing has potential for broadening the base of so-called "thin markets" only to the extent that buyers and sellers have the same beliefs about the quality characteristics associated with the traded goods. Commodity identification can serve buyers and sellers in so far as people trust the standards and have faith in those who perform the grading function.

A national marketing system needs uniform standards provided by federal government. States and other groups could probably establish adequate product classifications. Practically speaking, however, the need for a single set of operative standards requires the federal government to take the lead.

We know that we have the experience and present capacity to train individuals to apply the objective standards better than anyone else. We have enjoyed a reputation for fairness and honesty in providing grading services to the agricultural industry for a long time. As we noted earlier, agriculture is a risky business. The people who buy and sell commodities have the right to expect that their goods be represented accurately in the marketplace.

By Alvin E. Oliver, Executive Vice President, National Grain and Feed Association

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In the past two years, the grain industry has confronted four major areas of user fee proposals that affect it directly. User fees have been considered for total or partial funding of: 1) federal grain inspection and weighing services conducted by USDA's Federal Grain Inspection Service; 2) examinations of warehouses by USDA's Agricultural Marketing Service; 3) regulation of futures trading administered by the Commodity Futures Trading Commission; and 4) maintenance of the inland waterways. While imposition of user fees for futures trading regulation and increased fees for the inland waterways still are pending, increased fees for warehouse examinations and grain inspection and weighing have been implemented. With the change to greater industry financing of these federal programs, government and industry both have learned some valuable lessons.

Arguments can be made for user fee systems to support selected areas of government services. The General Accounting Office, in a March 1980 report, stated that "Federal agencies provide goods, services and privileges that benefit identifiable recipients. Charging for these benefits is equitable since it assures that costs are borne by beneficiaries rather than tax payers in general."

In practice, however, the National Grain and Feed Association has found it is not always easy to determine who the beneficiaries of government programs really are.

User Fees for Federal Warehouses

Consider, for example, the Federal Warehouse Program that is administered by the Agricultural Marketing Service. Since it was enacted in 1916, the purpose of the federal warehouse program has remained unchanged: to maintain a system of examination and licensing of warehouses in order to: 1) protect farmers and others who store agricultural products in public warehouses; and 2) assure the integrity of warehouse receipts as documents of title.

The federal warehouse system is entirely voluntary. Warehousemen apply for federal licenses, and if approved, come under the federal oversight of AMS. Over the years, the federal warehouse program has earned a reputation as a quality program. It is widely utilized, with more than 40 percent of all commercial grain storage capacity now federally licensed. Despite strong industry support for the program, an informal survey we conducted when user fees were first proposed showed that some 50 percent of all federal warehouses would probably drop out of the program if full-cost user fees were assessed.

Although some might conclude that such a reaction from industry was indicative of the true economic value of the program, such a conclusion would be wrong. USDA recognized the nature of the problem in trying to fund the full costs of the program through grain industry assessments. In its report to the Secretary of Agriculture, the USDA elevator task force stated that "Prime beneficiaries (of the federal warehouse program) cannot be reached for user fee assessment and one beneficiary (the warehouseman) is being 'tapped' for full amount. Anyone who has an interest in the stored product benefits: the producer or other depositor, Commodity Credit Corporation, banks or other lending agencies, bonding and insurance companies, and warehousemen...."

A cooperative effort between USDA and the grain industry resulted in a solution to this problem. As the owner of a considerable amount of grain in commercial storage and the primary lender to farmers who use grain as collateral, the Commodity Credit Corporation has always been a primary beneficiary of the federal warehouse program. For years CCC has used the warehouse inspection program funded and operated by AMS as a cost-free means of keeping tabs on federal warehouses that store government grain. As an alternative to charging full-cost fees to warehousemen, USDA proposed that the program costs be shared between Commodity Credit Corporation and the industry. This is the user fee plan that went into effect in 1982. Given that more than 90 percent of all federally licensed facilities stayed in the fee-funded program, this plan probably maximized the total cost savings to government while preserving the integrity and viability of the federal warehouse program.

User Fees for Grain Inspection

The move from government to industry funding had relatively minor impact on the federal warehouse program. However, the change to user fees for grain inspection and weighing services had rather dramatic consequences for the Federal Grain Inspection Service.

Prior to 1977, USDA's Grain Division was responsible for official grain inspection services in the U.S. With passage of the U.S. Grain Standards Act in 1976, the Federal Grain Inspection Service was created to perform official inspection and weighing services.

Although the industry had been paying fees for the direct costs of inspection and weighing for several years, the administration's budget proposal for fiscal year 1982 also required the industry to pay for costs associated with supervision and administration of the program. What this meant to the industry was an increase in total charges to cover roughly 90 percent of all FGIS outlays. Prior to this, industry user fees had covered slightly over 50 percent of FGIS expenditures. The increase was significant, amounting to approximately three-tenths of a cent per bushel or about \$10 for every covered hopper car officially inspected and weighed.

At the time of the user fee proposal, FGIS had every characteristic of a government agency going out of control. At its beginning in 1977, FGIS had fewer than 800 employees. By the end of fiscal 1981, however, FGIS employment had more than doubled to nearly 1800 full-time workers. Much of the increase in FGIS personnel occurred in layers of supervisory and administrative positions. In 1980, approximately 45 cents out of every dollar expended by FGIS

went to pay for supervisory and administrative costs. FGIS had become involved in several program areas that either duplicated other government programs already in existence or extended well beyond the statutorily defined mission of the Federal Grain Inspection Service.

The grain industry was not willing to accept higher FGIS user fees without provisions for cost control. And, in its Budget Reconciliation bill last year, Congress imposed three important provisions on the FGIS user fee program: 1) a ceiling on expenditures for administrative and supervisory services; 2) a periodic Congressional reauthorization to insure responsible administration and operation of the program; and 3) establishment of an industry advisory committee.

This legislation brought significant improvements in FGIS operations. Much of the administrative overhead has been cut. The organizational structure has been trimmed and FGIS employment has been reduced by more than one-third. The industry advisory committee has proved to be a tremendous asset in directing needed changes in FGIS to maintain its quality of service at a higher level of efficiency. With these changes, many of them very difficult for a new agency administrator to make, has come a renewal of industry confidence and support for the agency.

The Rationale for User Fees

In looking back at the grain industry's recent experiences, I would like to make a few observations about user fees. I believe that there is continued support, both within and outside the government, for the concept of user fees. In some areas of government we have gone too far in using general tax revenues to support agencies and projects that benefit a small group or specific segment of the nation. I know of very few in industry who would not support the concept that everyone should pay their own way for the benefits of government programs that they receive.

However, the practical problems associated with user fee programs for government services can be enormous. A primary obstacle in charging user fees is, first, to determine who benefits -- who should be paying the bill? Beneficiaries are not as readily identified as it may seem. The official grain inspection and weighing services performed by FGIS benefit the grain trade, of course. But they also benefit the producer, the processor, the consumer and every citizen of the U.S. because these services enhance the reputation of U.S. export grain, thereby contributing to our earnings from grain sales abroad.

As I mentioned earlier, the federal warehouse program benefits the warehouseman, the farmer, the banker, Commodity Credit Corporation and a number of other groups. In the case of the fees that have been proposed to fund the Commodity Futures Trading Commission's regulation of commodity markets, every consumer throughout the world benefits from having an open, competitive futures exchange to efficiently price grain for distribution and consumption during the marketing year.

Thus far, the government has dealt with this issue of who benefits and who pays by imposing fees only on those industry segments most directly associated with a particular government activity -- the grain industry pays for federal grain inspection; warehousemen and CCC pay fees for warehouse examinations. The only justification for this approach is that these segments, by their close association with the program, are the ones most likely to understand the true economic value and importance -- that is, the ones most willing to pay for the services. The problem with this idea is that the economic value received by direct users of the programs may represent but a small fraction of the entire benefits to society. This presents an inherent danger in the user fee concept: If assessed fees are too high, direct users may not be willing to pay for the amount of government services that would ensure maximum net benefits to all "users," including those who benefit indirectly.

The answer to this problem seems to lie in arriving at the proper mix of funding from industry fees and general government revenue. In the case of FGIS, the industry now pays 90 percent of all costs of the program, with government appropriations funding the remaining 10 percent. With these higher industry fees, we have seen a significant shift from the use of official services to unofficial inspection and weighing. If this trend continues, the existence of the program could be in danger, at least in the interior where official inspection is not mandatory. I believe a valid hypothesis in this case is that 90 percent may be more than an equitable share of FGIS costs to impose on the industry. At some point we may need to reassess which of the FGIS costs really should be borne by the government through general tax revenues.

There is one benefit of user fee programs for government services that should not be overlooked. In the case of FGIS, the industry took an active interest in the efficiency and operations of the agency when it realized that it would be responsible for a substantial portion of the FGIS operating budget. With the establishment of an industry advisory committee, the grain trade has been able to communicate its views concerning which programs are important and necessary and how the agency's operations might be adjusted to promote efficiency and cost-effectiveness. Through a cooperative industry/government exchange of ideas over a two-year period, FGIS has been transformed into an efficient government agency that provides the essential services called for in its mission. These changes would not have been made without the move to greater industry funding. Despite all the rhetoric about reducing the scope and size of federal government operations, FGIS is one of very few agencies that has made any headway in this area.

Other agencies considering user fees should realize that budgets will be scrutinized in ways different from OMB, Appropriations Committees, GAO, and agency budget offices. Industry now will have a searching eye for programs that are not cost-effective, if industry is expected to bear the costs of those programs. Despite the drawbacks of government user fee systems -- including identifying the true beneficiaries and devising fee systems that provide equitable cost sharing -- this realization that user fees can encourage more active involvement by the private sector in reviewing government operations provides a glimmer of hope that it may yet be possible to keep the costs of the federal government under control.

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Agricultural trade has always been a particularly difficult issue in international discussions, because of the vital importance of agriculture for every country in the world.

Adequate food supplies are the indispensable requirement for independence, social stability and general economic growth. The provision of sufficient supplies implies the existence of an efficient, flexible agricultural industry within the country and balanced trade in food and feedstuffs with foreign countries.

As countries are faced with differing national, economic, social, historical and political situations, their agricultural policies are by necessity different too. They differ in their domestic support programmes as well as in their import and export policies. But even in one and the same country such policies can differ according to the commodity as exemplified by the U.S. and the E.C.

Consequently, it would be unwise to suggest that agricultural policies, including agricultural trade policies could be brought into line with policies in the industrial sector where much more uniform conditions prevail.

For the reasons mentioned above it would also be unrealistic to suggest that agricultural import and export policies should be mainly based on the aspect of comparative advantages. A number of food shortages and embargoes in recent years have shown that major dependence on supply from the world market is not a convincing proposal. But even in the absence of such extreme conditions the volatility of the world market is considerable. This becomes evident when we compare world trade with world production. In the period from 1977 to 1979 for example the ratio for cereals was 13,4%, for feed grains 11,6%, for oilseeds 17,5% and for all meats 3,1%. These figures show that any imbalance between world supply and demand results in even more important world price fluctuations which may have serious effects on importing and exporting countries according to the situation. Even a reasonable stock policy may not be sufficient to smooth out such fluctuations if natural supply and demand imbalances are accompanied by worldwide recession, credit shortages and an overly strong currency in a major exporting country, as is the

case right now. By the way, had importing countries created buffer stocks earlier, the situation for U.S. exports might be even worse today.

The preceding observations should help towards better understanding of the European Community's (E.C.) Common Agricultural Policy (CAP).

When the original six member countries created the European Economic Community (EEC) in 1957, they were confronted with highly divergent agricultural policies and in particular very different agricultural structures in the various countries, resulting as elsewhere from differing natural, economic, historical and political situations. Harmonization of these policies within a common European policy was not only a major challenge but it also became a key instrument of European integration in general. The CAP will maintain this key role for many years to come and in particular in the context of the accession of Spain and Portugal.

The Treaty of Rome creating the EEC enumerates as five main objectives of the CAP:

- to increase productivity
- to secure a fair standard of living for the farm population
- market stability
- supply assurance
- and reasonable consumer prices

In order to achieve these objectives the following three principles were developed:

1. Establishment of a single market characterized by the free movement of agricultural products within the European borders.
2. The Community preference - the mechanism which protects the single E.C. market for a number of products from world price fluctuations and ensures growth in intra-Community trade.
3. The principle of financial solidarity among member states to finance together through a common fund, the cost of the CAP.

The above mentioned objectives and principles are mostly the same as those in the U.S., although their implementation had in part to take place in a different way due to differing conditions in the E.C.

The main instrument of implementation was the creation of market regulations establishing price targets which are subject to annual review.

Today, 70% of agricultural production in the Community (grain, milk, beef, veal and other products) benefits from more or less elaborate price support mechanisms bolstered mostly by governmental intervention buying. For the other 25% of production

(e.g. eggs and poultry) more indirect support mechanisms apply. Finally, for a small percentage of production, aid is given in the form of deficiency payments.

As a whole this programme has worked rather well in the past. It helped to integrate European agriculture and to adapt it smoothly to more efficient forms of production. The agricultural labor force declined by half from 18 million to less than 9 million (including our newest member, Greece), farm size doubled (average farm size now about 45 acres) and productivity jumped up. Average farm income increased steadily in the earlier years and kept until 1975 in line with incomes in the industrial field; since 1976 real farm income remained stagnant or even declined as in 1979 and 1980. However, notable income differences still exist between various agricultural regions in the Community. These discrepancies can only be overcome through a strong and effective regional and social policy towards which important steps have already been taken.

The aim of market stability and to ensure reasonable prices to consumers was also reached. Although food prices are generally higher in the Community than in the U.S., the influence of farm prices in the housewife's shopping basket should not be over-estimated as food prices include a large and growing proportion of costs quite independent from the prices paid to the farmer.

Finally, the aim of supply security has been reached for some agricultural items to a degree even of over-self-sufficiency, e.g. dairy products, sugar, barley and some types of wheat. However, for other products and particularly such animal feedstuffs as soya, corn, tapioca, etc., required for intensive breeding, the Community has increased its dependence on external supplies which is not without danger as the soya embargo in 1973 showed.

These evolutions accompanied by growing budgetary costs for the E.C., the need to develop new E.C. policies in areas other than agriculture, the recognition that unchanged direct price supports may give the richer farmer too much and the smaller farmer not enough, and finally the aspect of the upcoming accession of Spain and Portugal to the E.C., made the E.C. institutions think about a reform of the Common Agricultural Policy.

Therefore, additional steps in the direction of an adjustment of our policy have been taken.

Since last year Community sugar no longer benefits from financial government support. All storage and disposal costs of surplus sugar have to be born by the producers themselves. The results of this change are encouraging. The E.C.'s 1982 sugar production is expected to drop by 9% below 1981 levels and a further decline is expected for next year.

In the dairy sector we have applied for some years a farmer co-responsibility levy which already covers 10% of the surplus disposal costs. In addition, the Council decided this year to take appropriate action if deliveries of milk in 1982 exceed those in 1981 by more than 0.5%. As this has become reality the E.C. Commission recently proposed to reduce the 1983/84 intervention prices by 2,2%. The E.C. Council will have to decide on this proposal in Spring 1983.

For the cereals sector the Council fixed this year a guarantee threshold of 119.5 million tons (all cereals excluding durum wheat) for the 1982/83 period. If average production for the three marketing years 1980/81 to 1982/83 exceeds this level, intervention prices in 1983/84 will be reduced. However, if imports of cereals substitutes in the marketing year 1981/82 exceed 15 million tons, the guarantee threshold will be increased accordingly. As things stand now, some reductions will probably have to be applied next year. Independently from the application of this mechanism the Council is committed to pursue a prudent price policy keeping support price increases below inflation rates in order to bring over a number of years E.C. cereal prices closer to support price levels in other major grain exporting countries. Such policies should increase the utilization of Community cereals in animal feed, reduce the E.C.'s dependence on feedstuff imports from third countries, allow for relatively lower price support increases for animal products in the future and finally keep growth of E.C. cereals exports within reasonable limits.

The question may be asked why we do not intend to apply the mechanism of full farmer responsibility for the disposal of surplus dairy products and cereals as we do now in the sugar sector. The answer to this question is that the structural differences between the sectors mentioned are too important.

Furthermore, our present cereals exports can by no means be considered excessive.

A certain level of production beyond immediate domestic needs is either necessary or appropriate for a number of reasons:

- we have to shield ourselves against the possibility of either domestic or international crop shortages not only in wheat but also in substitutable products such as soybeans or corn
- we have to remain able to fulfill our food aid commitments
- we have to give our member states the possibility to utilize their natural resources in the most productive way in order to obtain the necessary means for buying imports of other agricultural and non-agricultural products such as oil
- we contribute through our exports to a diversification of sources for importing countries which leads in the long term to more stable supply and demand conditions on the world market.

It is well understood that the Community will continue to respect its GATT obligations and particularly those under the new Subsidy Code. At the same time nobody can expect the Community to renounce its rights which it has under the same provisions. The E.C. farmers have to have a chance to participate in a equitable way in expanding international trade.

The E.C. has for some time been confronted with the argument that export competition is fine as long as it does not involve export subsidies. But this is not what the Subsidy Code says. Our export refunds simply bridge the gap between E.C. domestic prices and world market prices, which mostly are determined by other exporting countries. The refunds are therefore not intended to undercut world prices or to gain more than an equitable share in world markets. Consequently, they are in conformity with the Subsidy Code provisions. By the way, the U.S. and others apply subsidies with effect on exports too.

The Subsidy Code was a compromise after long and difficult negotiations in the Tokyo Round which ended only three years ago. It may not be considered as an optimal solution by some major contracting parties, but it is the only basis for orderly international trade which we have at present.

It would be unrealistic to expect that the E.C. could give up its present set of agricultural policies of which import levies and export refunds are an integral part. It is the Community's basic decision to maintain stability on its domestic market, which at the same time contributes also to stability in international markets. If the Community with about 270 million people and the largest single share of world imports were not to pursue such a policy, the fluctuations on the world market in supply and demand and even more in prices could be devastating.

What can, however, be expected is, as indicated earlier, that the Community will in major commodity sectors bring its prices closer to world market conditions. Such a move would further reduce the relative importance of import levies and export refunds in the E.C.'s external trade. But such a development will take some time.

We would hope that other countries would at the same time re-examine and adjust their own systems which in the case of the U.S. should bring about the abolition of various import quotas.

In the meantime the major exporting countries including the E.C. should use all possibilities to cooperate with the aim to analyze and solve existing problems in a pragmatic way parallel to the analytic work going on in GATT and OECD. A "subsidy war" which was threatened on this side of the Atlantic as an alternative cannot be a solution for anybody. All parties would lose in the end.

The following examples show that pragmatic solutions are possible:

New Zealand and the E.C. have cooperated for some time in stabilizing the dairy export market, where prices consequently doubled in recent years. The Community contributes to this success by heavy and costly disposal of dairy surpluses on the domestic market, a way which should be more actively followed by the U.S. in its present situation of large CCC dairy stocks.

In the sugar sector the Community also cooperates very closely with the International Sugar Organization in order to stabilize world prices. Although not yet a member of the organization the E.C. voluntarily took 2 million tons of white sugar from the market and is considering additional measures to strengthen world prices. It is expected that, in addition, its new sugar regime as described earlier will further reduce E.C. production.

I would believe that such cooperation should also be possible among major grain exporting countries. In the end nobody can have any interest in selling his products at a loss. If U.S. target prices have any meaning they are as indicators showing which prices U.S. producers should as a whole at least obtain to stay in business in the long term. Present market prices, as everybody knows, are well below those targets and it would be too easy to blame E.C. exports for this situation. The E.C.'s wheat world market share has not increased over the last 12 years at a time when the U.S. share increased from 38,4% to nearly 45%. In addition, wheat production increases in the U.S. during the last four marketing years, were more than double the Community's annual wheat grain exports during that period. Furthermore, the E.C. is a massive importer among others of soybeans, corn and corn products and does not compete in these products on the world market. Therefore again, the reasons for present low prices lie elsewhere and they should be properly addressed. When this will be the case, the E.C. will in my view be ready to participate in a productive dialogue with the U.S. and other partners in order to find solutions to present problems.

In other areas of common US/EC interest bilateral contacts should take place whenever problems arise. Otherwise insufficient information and misinterpretations may produce tensions which could burden our relations. We have seen in the past that in many cases such sort of dialogue is the only way to achieve mutually acceptable results.

A cooperative relationship between the U.S. and the E.C. is in the best interest of the U.S. Both in industrial and agricultural trade with the E.C. the U.S. enjoys a considerable surplus which in the agricultural sector was constantly increasing over recent years and now amounts to nearly \$7 billion. By the way half of our agricultural imports from the U.S., worth about \$9 billion, enters the E.C. duty and levy free. Such a deficit of \$7 billion shows its real dimension when we consider that the E.C. is not only United States' best customer but also the world's. The E.C.'s overall deficit in agricultural trade amounts to about

\$25 billion at a time when the U.S. enjoys an overall agricultural surplus of the same order. However, our common interests go beyond our bilateral trade relations. The U.S. and the E.C. are not only each other's most important customer but our countries are the main participants in world trade. The international trading system depends therefore on our productive cooperation in order to progress. In addition, we share other interests of more global nature, which may be even more important.

It is therefore essential that we overcome present disputes in agricultural trade questions in a spirit of cooperation. I am confident that we will achieve this goal. We all hope that the forthcoming US/EC cabinet level meeting in Brussels on December 10, will show the way.

Remarks by Hisao Azuma, Counsellor, Embassy of Japan
at the Agricultural Outlook Conference

Washington, D.C.

December 1, 1982

Mr. Chairman, Ladies and Gentlemen:

It is my great pleasure to participate in this conference, and especially to be given the opportunity to share my views on the topics of agricultural trade.

The Japanese receive great satisfaction in the fact that Japan is by far the best customer for United States agricultural exports, and that over the past decade United States agricultural exports to Japan have increased from \$1 billion to \$7 billion in value -- in other words, the value has increased seven-fold. At present, cropland area in the United States used for exports to Japan exceeds the total cultivated land areas in Japan itself.

I think the United States and Japan share a remarkable history of mutual efforts in the agricultural area - not only in trade, but in all aspects. Looking back to 1960, at the beginning of rapid economic growth in Japan, the Japanese food self-sufficiency ratio at the original calorie base was 75%, compared with 41% in 1980.

From 1960, Japan has been opening her food market gradually but dramatically to foreign countries by adjusting its farm industry to the new era. In the course of such adjustment, the

most serious consideration has been focused on the question of how to assume a stable supply at a stable price - not necessarily at a low price.

If the import price of agricultural commodities rises abruptly, consumers of importing countries would be hit very hard. As most consumers in Japan receive salaries, their incomes are adjusted every year in line with the previous year's consumers' price index. Consumers would be under greater constraints when faced with abrupt price increases of essential goods, especially food, even though they can eventually adjust to the gradual price increases.

The Japanese have had some experience in the past when rapid price increases in food caused some social unstableness. Even during the first oil shock, accompanying a shortage of food production, the Japanese formed lines outside supermarkets to buy sugar, vegetable oil and even flour, viewing the possible circumstances of an unpredictable future price increase.

Moreover, in an overall government economic policy for the sake of accomplishing a stable but growing society, stabilization of consumer prices is the primary important matter. Because abrupt price fluctuations on food make it very difficult for the government to decide on an effective economic policy, due to the technicalities of almost all indexes of economic policy - i.e. real investment, GNP, etc. - are calculated by the devaluation in the price index.

On the other hand, judging from the fluctuations of production caused by weather and limited marketing chance, due to perishable

conditions, the price of agricultural commodities tends to fluctuate easily. Especially in the world trade market, since the percentage of quantity trade in world production is not so large, the price fluctuation tends to be stimulated. Let us take the example of grain whose trade was rather stabilized. In 1973, as you will remember, world grain production was low due to world-wide poor weather conditions. The decrease of production itself was only 5% from the average yearly production figure, but world trade was seriously affected. The quantity of world trade at that time accounted for 10% of total world production and many countries tried to take advantage of supply for their own domestic markets. As a result, the price of most grain rose more than two times that of the original price in less than a year. A good example of rising prices in perishable commodities may be seen in the price of Australian beef in the world market which rose more than 6 times that of the original price in the past five years.

In the course of opening the market, Japan has chosen certain commodities, depending on supply from foreign countries, with mainly two criteria. First, commodities must not be perishable, so that they may be stored. And, secondly, that suppliers are reliable.

Of course, Japan views the United States as its most reliable exporting country for most commodities. Agriculture in the United States utilizes high technology, resulting in a very stable and efficient production despite the chance of poor weather conditions.

Moreover, the United States produces certain commodities not only for domestic use but also for the international market. These are the major reasons Japan has chosen the United States as a main foreign supplier of certain commodities. After the selection of commodities, mainly depending upon supply from foreign countries, the Japanese Government has been urging our farmers to shift their production to livestock, vegetable and fruits, which are perishable, while liberalizing trade barriers, to the extent that only 19 agricultural items remain under the residual import quota system, instead of over a hundred items in 1980. Even the share of beef and citrus production in total agricultural output are less than 4% each. Thus, I think Japanese agricultural trade is now a comparatively open market.

In the meantime, in the United States, dairy products, which fall under the import quota system - even though they are waived under GATT, share 10% of the total agricultural output, and if we add beef products, which are expected to be restricted under the Beef Import Act, the share of products under the import quota system amount to 30%. Of course, it must be pointed out that the Japanese Government supports the price of dairy products and rice products. Then, looking at the share of products under the price support system, the United States amounts to about 50%, Japan to 55%, and the EC to 65%. I have no intention of blaming these countries for such a situation, but, I believe within the agricultural field, there are various specific reasons, including the

historical one, for governments' purposes in supporting or maintaining the industry.

I have been speaking on our agricultural trade, but there is an issue that I feel anxious about coming from outside the agricultural field. It is so-called perception. In the United States, there is a temptation to take certain protectionist measures on trade under the economic recession. Those who yield to that temptation are arguing that unemployment has been caused by the imbalance of trade, which resulted from unfair trade practices, as exhibited by the Japanese import quota system on agricultural commodities. But, I would like to point out that the Embassy of the United States in Japan calculated that the trade increase, through the elimination of all import quotas by Japan, would amount to only \$500 million instead of \$20 billion of the trade imbalance. Nevertheless, such arguments make the perception by the average American citizen such that "when we import Japanese automobiles freely - actually auto trade is restricted by the means so-called 'self-restraint'--, why don't the Japanese import our beef and citrus freely?" Spreading such a perception to the people, will cause them to have the image as if the agricultural issue is the only conflict that we have in the trade field between Japan and the United States.

This perception makes our consultations or negotiations on agricultural trade very difficult. I would like to ask American

citizens to throw out such perceptions and to understand that:

- (1) Japan and the United States share a remarkable history of mutual efforts in the agricultural trade field and that Japan is now the best customer of the United States' farmers.
- (2) Japan has been opening its agricultural market in line with its long-term policy, and residual import quota systems on certain items function as the most important role in Japanese agricultural policy, as it would be very difficult to ask farmers to change or adjust their production patterns, which is a result of Japan's long-term policy.
- (3) In every developed country the government plays a part in supporting agriculture.

Both our countries have been involved in very good agricultural trading relations -- by far the best in the world -- and for the sake of maintaining this relationship, I hope that we will sit at the consultation table in a friendly atmosphere and appreciate mutual benefits.

Thank you very much for your kind attention.

TRADE POLICY VIEWS : AUSTRALIAN VIEWS

P.J. DIXON
Minister (Commercial)
Australian Embassy

I am very pleased to have the opportunity to participate in this session of the Outlook Conference on "Trade Policy Views".

In my first speech in the United States when I arrived in September, I took as a theme "World Agriculture in Disarray". Many of you will recognise that theme as the title of a book by Professor D. Gale Johnson of the University of Chicago and published in 1973. Professor Johnson is currently revising that book and, on the basis of recent evidence, there is certainly no need for him to change the title of the book - except perhaps to "World Agriculture in Total Disarray".

Coincidentally, the same years span the period between the last two GATT Ministerial Meetings - the Tokyo Meeting of 1973 and the just concluded Geneva Meeting.

Since the establishment of the GATT in 1948, Australian trade policy has sought a framework for an open trade and payments system which would take account not only of existing, but also emerging, trade issues and would, importantly, provide for the progressive elimination of trade barriers and other trade distorting measures. Australia's active pursuit of an open, multilateral trade system is based on solid grounds. As a country reliant on international trade but at the same time with generally limited economic influence, Australia has much to gain from a trading system with generally accepted rules offering conditions of equity, efficiency, predictability and stability.

While Australia's basic trade policy goals remain unchanged, their attainment has become increasingly complex. The current difficult world economic climate, with continuing inflation, slow economic growth and high and rising unemployment has placed the international trading system under great pressure.

We are all concerned with the current strains on the international trading system. It needs to be kept in mind however that while current economic difficulties may have seriously exacerbated the problems facing the international trading system, the genesis of the problems can be traced back for at least a decade - in the case of agriculture to the very beginnings of the GATT. Despite this we are constantly being told by our EEC colleagues that the world needs to digest the outcome of the 1973 Tokyo Round before any further meaningful negotiations or commitments can be undertaken.

Against this I suggest it is instructive to look at the decade of the 70's.

During the 70's the proportion of the world trade subject to non-tariff measures rose substantially. According to the GATT Secretariat, the proportion of transactions conducted under all kinds of non-tariff restraint now covers almost 50% of world trade.⁽¹⁾ The non-tariff measure - as distinct from the tariff - has now become the norm in protective trade measures. Of course, those of us involved in agricultural trade are only too painfully aware that non-tariff barriers to trade in their myriad manifestations have always been the norm.

Public subsidies to enterprises also rose strongly during 1970's. In addition there has been a trend recently to combine subsidies with, rather than use subsidies as an alternative to, other

forms of protection. Once again, in this area agricultural trade has the dubious distinction of being a trend-setter.

A further contributing factor to the demise of the international institutions - particularly the GATT which underpin the international trading system, has been the move towards "bilateralism" and the "solving" of multilateral trade problems in small groups. For countries like Australia this is an especially serious development. Effectively, what it means is that we, along with the other medium and smaller developed and developing countries, are "disenfranchised" even though our interests are affected directly or indirectly. To give you just one example; a so-called voluntary export restraint arrangement between the U.S. and Japan on automobiles potentially affects quite significantly, Australia's trade, albeit indirectly, given our position as a major supplier of raw materials to the Japanese steel industry.

A consequence of international trade developments since the early 1970's is the creation of a new breed of "special sectors" in the world economy. Agriculture which once had this dubious status all to itself, has now been joined by a range of other industries including steel, motor vehicles, textiles and apparel and perhaps electronics.

Against this background, it is hardly surprising that trade disputes have become more frequent and increasingly acrimonious. Not only have the "rules of the game" been found to be lacking, but as the Director-General of the GATT has pointed out, perhaps even more importantly the political will to adhere to the rules as they currently exist has seriously weakened during the last decade.

What then can be done about this disturbing state of affairs? Australia held out hopes that the GATT Ministerial Meeting in Geneva would show the necessary political will and set in train concrete measures to strengthen the open, multi-lateral trading system. For this reason Australia took a very active role in the preparations for the Ministerial Meeting and proposed an initiative to halt and subsequently windback trade-distorting assistance to industry. As well, we proposed concrete measures to improve and strengthen the GATT in the areas of safeguards, subsidies and dispute settlement and agriculture. With regard to dispute settlement we believe that our own difficulty in achieving a satisfactory outcome in our GATT case directed at the EC's sugar regime illustrated dramatically the GATT's quite fundamental weakness in this area. The serious problems created by subsidies, especially export subsidies, is a matter I'll return to shortly. More generally, on agriculture, we proposed measures which would have led to a fuller and more equitable integration of agricultural trade within the GATT system.

Most of you no doubt will be aware of the outcome of the GATT Ministerial Meeting. From Australia's viewpoint, the outcome of the meeting was very disappointing. As indicated in a statement made in Geneva on 29 November 1982 on behalf of Mr. Anthony, Deputy Prime Minister and Minister for Trade and Resources, the final document represents and I quote:

"A papering over of a number of the real issues. In most, if not all, of the important issues, the words are vague, ambiguous and shrink from firm commitments.

In agriculture the suggestions of negotiation has disappeared, as has the very mention of limitation of export subsidies. Yet the document talks solemnly of a "work programme" on agriculture.

On protectionism, positive and firm statements of intention earlier under consideration have given way to vague generalisations. The commitment to dismantling illegal trade restrictive measures has disappeared. In its place is a declaration of intent which could well be interpreted out of existence. Safeguards and dispute settlement have fared little better in the search for consensus.

As a result, Australia is not able to associate itself with this document and reluctantly cannot accept that, in itself, it represents a successful and adequate outcome from this meeting.

As the Minister made clear, a document coming out of this meeting which, in respect of the critical issues dominating world trade, did little more than put a package of words that are offering to all of us the licence of interpretation, would not be acceptable to Australia and would signal failure."

I should add that Mr. Anthony also indicated that not associating ourselves with the document "in no way affects Australia's basic commitment to the GATT and that Australia will continue to work constructively towards the longer term objective underlying this meeting". Since the conclusion of the Ministerial meeting, concern has been raised in Australia about the prospect of "bilateralism" intensifying. From this perspective we are

particularly concerned that the EC may suggest such an arrangement at talks with the United States scheduled for early December.

I would like at this point to talk in a little more detail on some aspects of trade policy as they impact on Australian agricultural trade - and particularly explain the basis for Australia's constant and deep seated concern over agricultural trade.

While Australia's trading base has been diversified with the dramatic growth over the last 20 years in our exports of minerals and energy resources, agricultural exports, still account for around 40% of the total value of our exports. (2)

As many of you will be aware, Australia is a producer and exporter of most agricultural products - temperate as well as sub-tropical. In a real sense then we are the one country with a broad span of global export farm interests. Our special concern for agricultural trade is made even clearer when it is noted that about 50% of our beef production is exported, 75% of our sugar and 70-80% of our wheat. (3) Australia has simply no option but to continue to participate in the world market for agricultural products and to seek an improvement in the framework governing agricultural trade.

For the last 30 years or more the primary concern for Australian trade policy with respect to agriculture has centred on government intervention in agricultural markets - via price supports for domestic producers, controls on imports, and export subsidies. Regrettably, little progress has been made on most

fronts and the situation facing agricultural trade has in fact significantly worsened.

Australia has devoted considerable effort in recent years in attempts to counter the destructive impacts of the CAP on world agricultural trade - we believe with very good reason. More than any other country Australia has been hit by the introduction and extension of the EC's CAP. Whereas in 1972 Australia's share of the EC import market for food and foodstuffs was 3.6%, by 1979 it has slipped to a mere 0.9%.⁽⁴⁾ This progressive exclusion of Australian farm products - products which on the basis of quality and price should be highly sought after - is a direct result of the operation of the CAP. It is when you get down to what the loss of the EC market means for particular commodities and in dollar terms that the true dimensions become apparent. Between 1958/59 and 1981/82, the share of Australian beef and veal exports going to the EC fell from 56% to 3%, for dairy products and eggs from 69% to 3% and for sugar and wheat from near 50% to zero. It has been estimated that the loss of market share in the Community for agricultural items by Australia between 1962 and 1979 was at least \$US 1.1 billion. In fact, as Yeats points out the true value of the lost income stream from the share changes is far greater - of the order of four times greater.⁽⁵⁾

The effect of the loss of markets on Australia has been very real. The Australian rural sector knows what structural adjustment is all about. Industries for which no alternative market could be developed have had to scale down production. This inevitably has led to a reduction in numbers engaged in affected

industries with consequent adverse effects on towns and regions. In the past decade the production of dairy products has declined strongly with whole milk production declining by over 25% (butter down 60%), peach and pear production down 40% and apple production by 17%. Canned meat production fell by 39%. Associated with these large reductions in production have been comparable losses in the number of farms.

While this loss of traditional markets has been painful, of even greater concern and complaint is the emergence of the Community as an agricultural exporter of major proportions on the basis of subsidised export disposal. What really hurts is that non-traditional markets in Asia, the Middle East and the Pacific which we pioneered and developed with considerable effort are now becoming the victim of the EC's CAP through the impact of subsidised exports.

The Community's policies appear to involve the disposal of surpluses into third markets irrespective of whether the legitimate trade interests of other countries are affected - which of course more often than not they are. This cavalier approach was summed up in a recent Community document which said in part that:

In a climate of increased awareness of budgetary limitation, export has been the predominant means of disposal as it is the cheapest method currently available in most sectors....." (7)

The impact of the EC export subsidy practices have been well documented in the case of sugar. With export subsidies at times reaching around 250% of the world price, the EC has emerged from being a net importer of sugar 6 years ago to holding around 18.5% of the world market in 1981. A recent study has estimated the cost to

non-EC exporters (most of which are LDC's) to be some \$US520 million - \$US817 million per year between 1968/69 and 1980/81.⁽⁸⁾ As the U.S. is well aware, sugar is not an exceptional case - beef, wheat, barley, dairy products and poultry also receive extensive export subsidisation.

Australia appreciates and shares U.S. frustrations and anger at the EC's export subsidy policies and practices. However, we do view with great concern the prospect of the U.S. trying to counter the EC through its own costly export subsidisation program. An export subsidy war will destroy commercial markets for agricultural trade, with the smaller efficient exporters such as Australia being the worst hit.

While the EC's CAP has been our major trade policy concern in recent years, our trade policy problems in agriculture, unfortunately, also encompass other major developed countries including the U.S. and Japan. Quota limitations on sugar and dairy products limit our ability to sell into the U.S. market while a counter-cyclical meat import law restricts our beef access. While Japan has become Australia's largest market for agricultural products, nevertheless we still need to overcome a battery of restrictive measures affecting our sales of such items as sugar, citrus fruit and beef.

On the question of sugar, Australia has expressed its concern at the introduction of import quotas in the United States. The quota for the annual quota period beginning 1 October 1982 was set at 2.54 mt, 450,000 tonnes less than the indicative figure previously announced. Australia's entitlement of 211,000 tonnes is significantly below our annual average shipments to the U.S. in recent years of around 350,000 tonnes and such a policy is

clearly detrimental to the world sugar market and to major producers such as Australia. However, I would add that we have been pleased that quotas have been allocated in a non-discriminatory way and hope that further allocations remain non-discriminatory.

The U.S. Government assistance to the dairy industry is a classic case of protectionism. Unrealistic supports have led to intensified quantitative restrictions. The cycle repeats itself to the point where the U.S. clearly now has a very serious problem on its hands. We are worried because U.S. surpluses, if placed on the world market, will directly or indirectly affect our trade. It should be remembered that the Australian dairy production has been rationalised largely due to the limited markets available to us. Except for our own domestic market and the Japanese cheese market we have no substantial outlets. We export our 4,000 tonnes of cheese to the U.S., 3000 tonnes to EEC and have some casein trade with the U.S. and Japan. Apart from this there are only scattered small outlets for our dairy products.

Our meat trade with the U.S. is of major concern to Australia. The very severe drought currently affecting much of the Australian cattle country has resulted in extremely high slaughter levels and hence very high export availability. It is critical to the well being of this industry that the U.S. market, by far our most important meat market is not restricted to a greater extent than that envisaged in the bilateral agreement concluded between Australia and the U.S. during the Multilateral Trade Negotiations. I am pleased to say that the assurances we have received in this regard are of particular value at this time as I believe they will remove much of the uncertainty facing our exporters with respect to the U.S. market.

FOOTNOTES

1. J. Tumlr, "International Economic Order - Can the Trend be Revised", The World Economy, March 1982.
2. Compiled from information supplied by the Australian Bureau of Statistics.
3. "Historical Trends in Australian Agricultural Production Exports, Incomes and Prices". Australian Bureau of Agricultural Economics.
4. Calculated from OECD Exports by Commodity, Series C. Various years.
5. A.J. Yeats, "Agricultural Protectionism; An Analysis of its International Reform", Trade and Development. An OECD Review, No. 3, 1981 p.9
6. Compiled from information supplied by the Australian Bureau of Statistics.
7. Extract from EEC Commission Document Com (81) 58 Final of 23 February 1981, "The Situation of the Agriculture Markets", Report 1980, page 14.
8. I.M. Roberts, "EEC Sugar Support Policies and World Market Prices; A comparative Static Analysis", Working Paper, Australian Bureau of Agricultural Economics, January 1982.

FUTURE OF TRADE AND AGRICULTURE

Panel Discussion

Wednesday, December 1, 1982



Jefferson Auditorium
USDA, South Building
Washington, D.C.

PANELISTS:

Richard E. Lyng, Deputy Secretary, USDA,
Panel Moderator

William G. Leshner, Assistant Secretary for
Economics, USDA

David R. Bowen, U.S. Representative, Second
District of Mississippi

Gary L. Seevers, Vice President, Commodities
Department, Goldman, Sachs and Company

Dale E. Hathaway, Vice President, The
Consultants International Group, Inc.

MR. LYNG: Let's get started.

I'm Richard Lyng, deputy secretary of USDA, and I'm pleased to be here today as moderator of this panel.

We are going to do the panel a little bit differently than perhaps the other panels. Those of you who live in Washington are perhaps familiar with the format of Agronsky and Company and we have a panel of people here that are so good I thought we would try to put together a give-and-take on the subjects that have come up during the Outlook sessions and on the factors that we think are of special importance.

In taking a look at the outlook for the year to come in agriculture, we have got a great panel and we are going to toss out some of the issues and see how it works. I think we may all be talking at once, but we'll do that for half an hour or so and then open it up for questions and you can all join in the panel.

I'll introduce the panel members to you. On my far left, your right, is Doctor Dale Hathaway, a principal of The Consultants International Group, and many of you will recall that Dale Hathaway was under secretary of international affairs and commodity programs during the period 1977 to 1981. Prior to that he spent a number of years in academia in agriculture.

Like all the gentlemen here, with the exception of the moderator, he is highly educated.

1 ... Laughter ...

2 MR. LYNG: Doctorates are common here and Dale was
3 at Michigan State for many years as chairman of the department
4 of economics and previously as a professor there. He has his
5 doctorate from Harvard in public administration and has
6 literally spent a lifetime in agriculture.

7 The next gentleman is Gary Seevers, who is presently
8 vice president of Goldman, Sachs and Company, and was one of
9 the five original commissioners on the Commodity Futures Trading
10 Commission. He was appointed in 1975 by President Ford and
11 served as vice chairman and was elected and served as acting
12 chairman for quite a period of time in 1979.

13 Preceding that, I knew Gary when he was a staff
14 economist on the President's Counsel of Economic Advisors. He
15 then became one of the three members of the President's Council
16 of Economic Advisors, so he's thoroughly familiar with
17 commodity trading, with the operation of commodity futures
18 exchange, and with the White House economic problems.

19 He, too, is highly educated but he started out as a
20 farm boy in Michigan. He went to Michigan State University. I
21 think perhaps -- I wouldn't know who would have been whose
22 professor -- but I suspect they knew one another.

23 We're not going to date anybody here, Gary.

24 ... Laughter ...

25 MR. LYNG: I have selfish reasons for that.

1 ... Laughter ...

2 MR. LYNNG: He got his doctorate in agricultural
3 economics there and worked for MSU's cooperative extension
4 service.

5 Next, we have Congressman David Bowen of the U.S.
6 Second Congressional District in Mississippi. He was elected in
7 1972 to the 93rd Congress and has served five consecutive terms
8 in that position. He is one of the truly lame ducks in the lame
9 duck session because David decided not to run for reelection
10 this fall. Many of us are sorry to see that because we have
11 enjoyed working with him.

12 He is member of the Agriculture Committee and he's
13 also a member of the House Committee on Foreign Affairs. He is
14 chairman of the Cotton, Rice and Sugar subcommittee, and he's
15 on the subcommittee for Department Operations, Research, and
16 Foreign Agriculture.

17 He's a member of the Committee on Merchant Marine and
18 Fisheries and he's the ranking Democrat on the subcommittee on
19 Fisheries and Wildlife Conservation and the Environment.

20 Actually, he has been a supporter of the Department
21 of Agriculture. I have known him a number of years and he has
22 made a great contribution in representing his state.

23 Before he became a congressman, he was a political
24 science professor at Millsaps College and, at one time, worked
25 here in Washington at the Chamber of Commerce of the United

1 States. He is a graduate of Harvard and Oxford universities.

2 On my immediate left is Doctor Bill Leshner, assistant
3 secretary of agriculture for economics. I have known Bill for
4 a couple of years but I just learned in briefing he was born in,
5 of all places, Royal Center, Indiana. That tells you something.

6 ... Laughter ...

7 MR. LYNG: He was chief economist for the U.S. Senate
8 and, in 1980, was appointed by President Reagan to serve as
9 assistant secretary for economics here at the Department of
10 Agriculture.

11 He did his undergraduate work at Purdue and he got a
12 master's degree from Oregon State.

13 I think that was also someplace that Gary was. Didn't
14 you teach, Bill, at Oregon?

15 MR. SEEVERS: (Nods)

16 MR. LYNG: There's some kind of incestual thing going
17 on. David, you didn't go to school with any of these fellows,
18 did you?

19 ... Laughter ...

20 MR. BOWEN: I didn't.

21 MR. LYNG: Nor did I. More is the pity.

22 Then Bill went on to Michigan State -- no -- Cornell
23 and he got a doctorate. He went from Purdue to Oregon State to
24 Cornell, where he got his doctorate, and he was an assistant
25 professor there before he came to Washington with the Senate.

1 Of the issues that I think we might consider talking
2 about, one I know there is a good deal of interest in is
3 everything that relates to farm income.

4 We are all greatly concerned about that and most of
5 the things that we are talking about here now are designed to
6 do something about that. Our latest ideas relate to the PIK
7 program, Payment in Kind program, that we will be in a hearing
8 on next week before the Senate committee.

9 I think we might want to talk a little bit about that
10 and I think we might want to talk about foreign trade in
11 agriculture. There have been some significant things that have
12 happened in that and particularly the last week and the GAT
13 negotiations.

14 Dale Hathaway headed the agricultural team in the
15 Tokyo round of GAT and he's the acknowledged expert in that.
16 I'm a more recent expert in that I did spend all of last week
17 in Geneva as the agricultural leader in that meeting. So I
18 think we may have some things to talk about in terms of the
19 GAT negotiations.

20 We have got a number of issues that are timely.
21 December 1, we are starting the assessment of fifty cents per
22 hundred weight on dairy products today. That's not a popular
23 one. We have gotten many thousands of letters opposing it and
24 twelve letters for it and those people were all confused.

25 ... Laughter ...

1 MR. LYNNG: Or someone said they were. I didn't read
2 the comments.

3 But, in any case, we had no choice but to go ahead
4 with that and we're preparing to do another fifty cents on
5 April 1st. There is some talk about legislation on that and we
6 may want to talk about it.

7 These are a few of the items that might have some
8 interest and I thought it might be well to ask Congressman
9 Bowen what he thinks about the mood of the Congress. We have
10 the problem of foreign net income and generally whether the
11 lame duck session is going to take any action that would affect
12 the agricultural outlook for 1983.

13 MR. BOWEN: I think there will probably be some
14 movement and a number of bills introduced in the special session.
15 My judgment is that there probably will be very little
16 accomplished in the way of legislation placed but the groundwork
17 probably will be laid for a good deal of activity in the 98th
18 Congress.

19 I think that, if my district and my state are anything
20 to base that view upon, I would say that the sentiment there
21 on the part of the people who have for at least the last decade
22 supported programs that I think many of us have -- that is to
23 say open production, free trade -- are becoming disillusioned
24 and I think haven't decided exactly where they want to go.

25 They feel that what we have is not working well.

1 They realize that in most of the United States there's a terrible
2 depression in agriculture and they are disillusioned about
3 exporting ourselves out of this distress we are in because they
4 see worldwide depressed prices.

5 Our trading partners are engaging in practices we
6 don't and they are disturbed by the dumping on the part of the
7 European community nations. And they are beginning to ask
8 more vociferously whether we should try to play by the rules
9 of the game if nobody else does.

10 They, of course, would like a more aggressive policy
11 on the part of the government in terms of exports even though,
12 as I say, they don't see it as the panacea for their troubles.
13 They are pleased I think with what has been done so far with
14 the blended credit program. We have handled 75 million sales
15 for that since it was put to use.

16 But, in general, there is mass confusion. As I was
17 saying to Bill Leshner before we came in, it's as though it was
18 church we've had faith in for a long while and then we've begun
19 to doubt the tenants of our religion. They don't know which
20 way to turn and they are looking at all the alternatives, from
21 trying to turn the clock back, as it were, to the high-loan era
22 and more restrictive production and export subsidies, a variety
23 of things in that direction.

24 At the same time, they are also considering: why don't
25 we take the system we have and get it to work more effectively

1 by removing payment limitations and trying to target the
2 structure work.

3 I think we are at this point in a significant watershed
4 in American agricultural history and I feel that the historians
5 will look back and say this was a turning point. Perhaps there
6 are not many of those, but this is a turning point I feel,
7 engaging a crisis of self-examination and of re-examination of
8 our economy and trying to decide which way to go to make
9 agriculture work.

10 I'm afraid what I'm seeing is like the doctor looking
11 at his patient and saying, "You are very ill but I don't know
12 what to do about it."

13 MR. LYNG: Will you yield, congressman?

14 MR. BOWEN: I'm happy to.

15 MR. LYNG: Let's hear from Gary. You sit up there
16 in New York in one of the ivory towers with the famous Goldman,
17 Sachs. You know what we should do here. Tell us.

18 MR. SEEVERS: Well, Goldman, Sachs is not really an
19 ivory tower. That was at Oregon State and Michigan State.

20 Having not spent a lot of time on the subjects in the
21 last few years, I have been doing some thinking and have come
22 up with some simple solutions. Let me just throw those out.

23 We ought to get our own house in order with respect
24 to our agricultural program. I think it has drifted away -- a
25 long, long way -- from the market-oriented programs that evolved

1 in the late sixties and early seventies. Beginning in about
2 the mid-seventies, something went wrong and we headed right back
3 to the fifties in my opinion.

4 Secondly, I think we should expand PL-480. I have
5 asked a few people, but I think that subsidized exports are an
6 effective way to consider expanding our exports as well as
7 achieving other objectives.

8 I think other things have to happen to make this
9 situation more bearable and hopefully prosper at some point.
10 Obviously, that's if the world economy began to recover and
11 particularly was lead by the American economy. But, when that
12 happens, that's going to solve a lot of those problems.

13 There's a weak wheat demand and that situation is bad
14 and not getting any better. I guess the question is whether,
15 underneath all this, there's a healthy economy seeking to emerge
16 in America or whether we're in this fix for a couple or more
17 years. If so, then the problems we are focusing on today are
18 going to be more serious.

19 I think, finally, that we need to recognize that we
20 had a period in the late seventies through sometime in 1980 or
21 1981 when basically there was an attitude in the financial
22 world of lend, lend, lend, and the investors had the idea they
23 had to spend and leverage and borrow.

24 That's changed in the last year and that's a whole
25 bunch of it. It's changed within this country and, more

1 importantly, it's changed in a lot of countries important to the
2 export picture. And it's cutting twice because some of the
3 exporters are the more aggressive exporters and it's going to
4 take a couple of years to get through the financial crisis in
5 the developing countries. Particularly in Latin American
6 governments it's going to take a couple of years and they are
7 less aggressive exporters and less and less importers.

8 When I put all that together, it seems to me to look
9 to be a period of time when things are not going to be so rosy.
10 In terms of exports, volume of exports, it's a question of are
11 we going to try to hold on to these high levels that have
12 occurred in the last decade or are we going to skip back some
13 10, 15, 20 percent?

14 MR. LYNG: Gary said these problems started about in
15 mid-seventies. That's when you were under secretary, Dale.
16 You watched it evolve. You were here like the rest of us are
17 now who are so close to it and can't observe it. Like Gary,
18 you have been away from it a bit.

19 I wonder if you would comment on anything you want to,
20 but particularly looking at GAT from a distance at this time,
21 what do you think about that?

22 MR. HATHAWAY: Well, Mr. Deputy Secretary, I commented
23 to Gary as I sat down that the last time I was in this room I
24 was here to explain the doubling of exports in four years. At
25 that point, it didn't look all that bad.

1 MR. LYNG: Touche.

2 ... Laughter ...

3 MR. HATHAWAY: I have to agree with Gary that the
4 major problem is in fact a serious collapse in world demand
5 and that, until and unless we get recovery led by the United
6 States -- because without the United States leading, the rest
7 is not likely to happen -- and until we get the financial
8 situation cleaned up in a number of the middle income,
9 developing countries, the prospects are not good for increased
10 growth and demand.

11 On the GAT question specifically, I was not especially
12 surprised at what happened because it seems to me that, given
13 the context in which world agriculture is operating, it's not
14 likely that we are going to find many political democracies
15 that are likely to liberalize their trade practices under these
16 kinds of pressures.

17 So what I see happening is that we have set up
18 policies that, accidentally or otherwise, look as if we are
19 about to increase the price of the dollar and reduce the price
20 of agricultural commodities, when it seems to me in fact that
21 the problem we ought to have is to reduce the price of the
22 dollar and increase the price of agricultural commodities.

23 What I am saying essentially is that I don't think
24 that trade wars will do any good. I have seen no evidence it
25 will. We have done some of this in the past and they will get

1 their market share whether in Australia or Canada or Argentina
2 as well as the European community.

3 Therefore, it strikes me that what we need now -- and
4 it is a serious problem -- is international cooperation to give
5 the U.S. some relief from carrying all the adjustment burden
6 in a collapsing demand.

7 As matters now stand, we are carrying virtually all
8 the adjustment burden. Although Canada and Argentina and
9 Australia are pricing, I don't think we get cooperation and
10 burden-sharing basically by going around threatening a price
11 war and trade-share war. Therefore, I'm discouraged by what
12 happened at GAT. I'm not terribly surprised that's the
13 direction we're going in.

14 I've heard a lot of people talking and seen it in
15 the paper, but it's not going to help. It's going to hurt and
16 hurt and last longer.

17 MR. LESHER: I think we --

18 MR. LYNIG: I would like to respond a little bit. You
19 come later.

20 ... Laughter ...

21 MR. LYNIG: I generally would agree that probably a
22 trade war would be not only an unpleasant and unproductive
23 thing but I do think, as we see the European community
24 expanding their volume of exports and taking business away from
25 us, it's going to be very difficult not to do what they actually

1 suggested in Geneva that we do and that's that we do the same
2 thing they are doing, subsidize exports in order to maintain
3 our share.

4 I don't see how we can avoid it if they continue to
5 increase their prices to stimulate their producers to expand.
6 They are talking now of another round of price increases in
7 Europe. COPA, a grower's organization, has an across-the-board
8 average increase. That type of thing is very difficult for
9 farmers in the United States to understand and for us to compete
10 with them and take actions that some people might call war.

11 This is a big subject. We can talk more about it later.

12 I would like for Bill Leshner to describe what we mean
13 by PIK.

14 MR. LESHER: As Dale alluded to the fact, the United
15 States is bearing the lion's share, if not close to the total
16 share, of carrying the burden of stocking of grains. We now
17 have, looking to October 1983, a carryover of 60 percent of the
18 world stocks. That's more than we export in one year.

19 It's very costly and our expenditures are, net
20 CCC price-support activity, \$12 billion and the prospects are
21 not good for that coming down.

22 You have got to ask yourself what are you getting for
23 that money and the farmers are saying not very much. So we are
24 trying to find a way that we can in fact reduce our stock of
25 grain and try to give farmers what I would call a clean slate.

1 MR. LYNNG: How do you do it?

2 MR. LESHER: Well, the idea is, since you don't
3 really have any more money but you do have a lot of grain and
4 you won't make a lot of money for CCC grain, in fact you go to
5 the farmer and say we would like you to reduce your production
6 perhaps by 50 percent, perhaps your whole base. The farmer's
7 not going to be paid in money; we are going to pay him in grain.

8 That in fact reduces production but it will also bring
9 grain out of stocks and replace it. That has one major
10 advantage or two major advantages or several.

11 One is that a program like this is limited. It's
12 an emergency kind of program but it only lasts as long as you
13 have it. As you know, Mr. Deputy Secretary, we have had
14 emergency programs around here for twenty or thirty years, so
15 that's one advantage.

16 ... Laughter ...

17 MR. LESHER: There is also the advantage of shortening
18 the market. We request a mandatory cutback of 50 or 60 percent,
19 paid diverse. What do you do when you shorten the market? You
20 tell your competitors around the world to have at it. Just
21 like we told them in the embargo after Afghanistan.

22 That's exactly what happened then and that's exactly
23 what would happen if we shortened the market again. It has that
24 unique plus.

25 MR. LYNNG: Now, there will be a public hearing in the

1 next week. Are there any --

2 MR. BOWEN: I'd like to ask Bill and I don't want to
3 intrude on the public hearing.

4 What is the farmer going to respond? You are asking
5 me to cut back on production; you're not giving me cash I can
6 spend; I'm carrying the burden of the shortage; you're giving
7 me grain I can't sell, or do you want me to sell it and make
8 matters worse? That's the kind of quandry he has.

9 MR. LYNG: We hope he would sell it. We know that
10 most of them would. It would be their source of income. It
11 would be the way to maintain the supply, of moving the market,
12 but it would have the advantage of reducing production and
13 reducing the stocks at the same time.

14 MR. BOWEN: What are they going to do with the grain?

15 MR. LYNG: What they are going to do with the grain
16 depends on who it is.

17 MR. LESHER: You are talking about a farmer that has
18 100-acre corn base, for example, and who is not going to produce
19 100 acres but only 75 percent of that. Say, for example, if
20 you didn't introduce the program, he would produce corn on 100
21 acres to sell on October 1, instead of 75 percent of that.

22 MR. LYNG: When are you going to give it to him?

23 MR. LESHER: I know there are some discussions next
24 week. Two months; three months. I don't see how you could give
25 the farmer the grain until his actual harvest time and see what

1 he would produce himself.

2 MR. LYNG: Dale, was there something you wanted to say?

3 MR. HATHAWAY: You correctly mentioned that I did
4 spend some time in the Department and I developed great respect
5 for its professionalism but also a great skepticism about the
6 ability to administer terribly complicated programs, the ability
7 to do that.

8 I once had the unfortunate task of selling contracts
9 back into the market and it strikes me that you are talking about
10 a program where you and the government, not the market, will be
11 in fact setting prices, probably accidentally because either too
12 much will be going or too little. So it is an interesting
13 concept, but I do have a question.

14 MR. LYNG: We would be pleased to hear it.

15 MR. HATHAWAY: I question whether it can be adequately
16 administered. I just have general question as to its -- if I
17 remember, the way CCC keeps its books, when they get rid of that
18 stuff, it disappears from the positive side of the ledger and,
19 therefore, shows up in the budgets. So it doesn't end up making
20 any difference in the budget outlays.

21 MR. LESHER: I would have to ask what the present
22 value of the CCC-owned grain is today. Three years from now,
23 the likelihood that you are going to sell the grain at the going
24 price are not that good. At the same time, you pay storage
25 each year and you have grain deterioration. You quickly come to

1 the value of maybe close to zero.

2 MR. HATHAWAY: From the government's point of view.
3 But I'm talking about the point of view of the producer.

4 The first thing they found when money was invented
5 was that it worked better than the commodities. I'm always
6 amazed that --

7 MR. LYNG: And our problem is that we have more grain
8 than we have money.

9 ... Laughter ...

10 MR. LYNG: Gary, speaking of money, Dale said that
11 nice thing -- that when the price of agricultural commodities
12 goes up, the value of the dollar goes down.

13 In the big money markets on Wall Street, why do you
14 fellows force the dollar up so high?

15 MR. SEEVER: Because we get blamed for a lot of other
16 things, why not get blamed for something real. The dollar is
17 awfully high and higher than it has been in a long time. I
18 don't think there's especially control of the dollar --

19 MR. LYNG: Do you think it happens?

20 MR. SEEVER: It might, I guess. The dollar is
21 probably at a near high and is probably going down but I don't
22 think it's going down a great deal. There have been a lot of
23 reasons that people want to hold dollars and dollar assets.

24 MR. LYNG: We know that interest rates were high and
25 that interest rates are going down. Does the dollar --

1 MR. SEEVER: About the time interest rates were coming
2 down in a serious way, we had Mexico and then we had the
3 Drysdale and Penn Square and those were all factors that made
4 people want to hold dollars around the world.

5 MR. LYNNG: I'm sorry I have to cut off the discussion
6 of this group. I think it's now time we throw open the floor
7 for questions from the audience.

8 We have a number of people here who I can see that
9 are also well informed. And if they want, they can make a
10 short speech or whatever. May we hear now from the audience?

11 QUESTION: Your remark in your opening statement that
12 we are preparing to go ahead on April 1 with the second step
13 of the dairy reductions, can you tell us more about that?

14 MR. LYNNG: I would appreciate it if people would use
15 the microphone. The question was that I said in my opening
16 remarks that we were prepared to go ahead with the April 1st
17 fifty cents.

18 The law, as written, calls for fifty cents today or
19 after October 1st and the second one on April 1st. If the
20 production was above, I think, the seven-and-one-half billion
21 surplus -- there's no question about a surplus; no one quarrels
22 about that-- so the Secretary doesn't have much option as to
23 whether to impose it or not. The only difference is that the
24 second fifty cents would provide for a refund or rebate of
25 fifty cents to the producer who has cut his production enough

1 to offset the surplus so that makes it more complex.

2 We're prepared to have that in draft form some time
3 during the month of December and there will be a comment period
4 of 45 days or so. And I expect, unless Congress changes the
5 law, it will go into effect on April 1st.

6 MR. HATHAWAY: Just as a matter of course, do you
7 really expect a modest cut in dairy supports if you cut the
8 price of grain? It seems to me the two offset each other and
9 you end up with a very modest, if any, effect on the incentives
10 to increase dairy production. It seems to me from the program
11 direction discussed that it's going in somewhat the opposite
12 direction.

13 MR. LYNG: First of all, we're not talking about
14 cutting the price of grain. Already, through the milk price/
15 feed ratio, we're stimulating the production of milk. No
16 question about that.

17 The fifty cents on December 1st will have the effect
18 of reducing the production of milk and for that reason will
19 have the opposite -- we've been hearing dairymen use strange
20 new words like "cash flow" --

21 ... Laughter ...

22 MR. LYNG: But the program was one that was given
23 to us by the Congress. It is peculiar. I don't mean to point
24 any fingers but no one likes it.

25 MR. BOWEN: I voted for your bill.

1 MR. LYNG: The little bastard has no father.

2 ... Laughter ...

3 MR. LESHER: I think that Gary's situation that he
4 was talking about -- what can happen when at the time you can
5 raise price supports and it looks like it costs less -- that
6 way of doing business comes back to haunt you two or three years
7 later.

8 We went to 80 percent of parity adjustment in the
9 Farm Bill. That set in motion a chain of events in increasing
10 numbers and we're just expanding milk production all over. Now,
11 you are faced with the problem of trying to get that stemmed
12 and it's much easier not to get it produced than to try to get
13 rid of it after it's already there.

14 MR. LYNG: Any other questions or comments?

15 QUESTION: It's kind of a two-part question about
16 dairy stores.

17 You talked about the PIK program and grain. What
18 about the dairy products that we have?

19 Also, you kind of have the outlook here that we are
20 kind of moving into a protectionist mood -- the Congress. How
21 does the administration feel about that? How do we prepare
22 next year for world trade going protectionist?

23 MR. LYNG: First taking the dairy stores: We
24 considered the idea of giving away powder and butter and cheese
25 but an in-kind program didn't seem attractive. We do have

1 cases and warehouses full of these commodities and we are
2 looking at every possible way of getting rid of them, giving
3 away cheese and giving away butter and powder domestically and
4 getting more dairy products into foreign, needy areas, AID-type
5 things.

6 Also, we are considering some sales of unrestricted,
7 international sales of butter. That would have to have prices
8 substantially lower than our support prices.

9 The second part of your question relating to
10 protectionism: I think that comes -- David Bowen mentioned
11 that and I think I'll let him go back to it again.

12 I do think there is the fact that agriculture has
13 generally been the prime opponent in the recent decade to any
14 protectionist legislation. It has been to the advantage of
15 agriculture to have as free a market as possible. I think that
16 Dale would agree with that.

17 Consistently, both parties form groups that have
18 opposed this. There is some regulation in that today in the
19 building of protectionism in the investment areas that have
20 traditional opposition from farm areas.

21 So we do see some real problems there. It could be
22 a bad thing.

23 MR. BOWEN: I agree with you. I see on the part of
24 my colleagues a reflection of the sentiment in the country, a
25 growing protectionist sentiment. I think that's an unfortunate

1 direction as far as it's going, but that's happening.

2 Of course, it's true across the board in industrial
3 commodities as well as the general protectionist climate even
4 developing in agriculture.

5 I tried to explain to my constituents and argued with
6 some of my colleagues about passing things like the domestic
7 content legislation. On the contrary, we are not going to
8 sell very much cotton, soybean, wheat to the Japanese if we
9 don't buy their cars.

10 But this is a feeling that I see growing around the
11 country and it's obviously a product of hard times throughout.
12 I think probably what we see right now in the special session
13 is the effort to pass content legislation which may get through the
14 House but not through the Senate and next year it will be
15 revived. And I think this would have a damaging impact on
16 agricultural exports.

17 MR. LYNNG: Dale, your comments on this?

18 MR. HATHAWAY: Well, this is a never-ending battle
19 but what strikes me, as you suggested Congressman Bowen, is that
20 some of your constituents losing their faith in the virtues
21 of agricultural trade and that the agricultural community seems
22 to be waivering a lot more than they had in the past decade.

23 I think it's unfortunate because, in this kind of
24 closing of world trade, U.S. agriculture will be inevitably
25 a big loser and the parts we lose will be the parts we work with

1 most and with the most competitive tendencies.

2 Really, it's very disconcerting but I guess under-
3 standable given the economic pressures in the industrial sector
4 and other parts of the economy.

5 MR. LESHER: What do you do? Looking back at wheat
6 and flour and poultry, in fact you see a few years ago that the
7 United States had a much larger share of the world market. And
8 it's clear the EC moved into those markets simply for no other
9 reason than their subsidies.

10 We have a dairy program that really is out of control
11 but we have tried to take measures to stem it, to keep it from
12 growing. Then you look at the European community and they're
13 increasing their price supports 8 to 10 percent. They're
14 subsidized more and more in the world market.

15 No one wants a trade war. I think you all end up
16 losers in the end but what do you tell the agriculture sector
17 here in the U.S.? How do you handle it?

18 MR. LYNNG: Gary, any comment?

19 MR. HATHAWAY: Ain't easy.

20 MR. SEEVER: I have a comment on direct subsidies
21 which is at the cutting edge of the discussion of protectionism
22 by Congressman Bowen.

23 There are natural, logical consequences of having
24 price supports too high but we are in a Catch-22 situation. We
25 have cried wolf enough in the past and we may need to do

1 something to maintain our credibility in the world. But I think
2 there is the danger of speaking loudly and carrying a small
3 stick on subsidies.

4 How much money is Congress going to appropriate on
5 exports? We're talking a big game but we're unable to do that
6 much because the money isn't there.

7 MR. LYNG: Any other questions?

8 QUESTION: I have a question for Bill Leshner.

9 You mentioned the chicken business. I take it that
10 you are looking at figures for 1980-81 and I have been looking
11 at them. You have it that the Middle East is where the EC has
12 been causing you some distress in selling broilers. Right?

13 MR. LESHER: Right.

14 QUESTION: And you look at the data, the statistics,
15 and it shows that Saudi Arabia is the only country in the
16 Middle East where you have lost a market. Rumania's another
17 one. Otherwise, there's a steady increase of poultry by the
18 U.S. in 1980 and 1981.

19 MR. LYNG: Not 1982 though. We lost all of Saudi
20 Arabia. We had five percent of our broilers this year in
21 production that was based on the previous years for export.
22 We have none of that --

23 QUESTION: The only thing I say is that it's more or
24 less down to zero in 1981.

25 MR. LYNG: 1982 is the period that we are really most

1 concerned about and in 1982 --

2 QUESTION: I have looked at the 1982 figures and the
3 only thing that astonished me -- Brazil I think was discussed
4 not in this session but the other session -- but Brazil has
5 definitely been in chickens. Right?

6 MR. LESHER: Correct.

7 QUESTION: I don't think the chicken business is a
8 symptom of anything long term. It's something that happened in
9 Brazil but I did just have a visit from someone in Brazil who's
10 in the chicken business down there and his business is gradually
11 folding. Of course, that's the fault of EEC, you say, but I
12 don't know about that.

13 MR. LYNG: I know that the broiler exporters have had
14 no place to go with them and he doesn't have much patience for
15 all this. It's not a major problem in terms of production but
16 it has caused the price of broilers across the whole nation to
17 go down simply because we tried to match production to demand.

18 QUESTION: My point is simply that on the chicken
19 drawout, it is only Saudi Arabia and there you lost 12,000
20 tons. If I remember correctly, that's what you lost. In general,
21 on the overall export of chickens, you have gone up.

22 MR. LESHER: No. That's not right but we can argue
23 about the figures later.

24 MR. LYNG: The data is clear. We just have to get
25 the same year.

1 Another question?

2 QUESTION: A number of the panelists have mentioned
3 the consequences of high support prices. I was wondering if the
4 department was going to propose that Congress lower the target
5 price for 1983-84?

6 MR. LYNG: Who wants to suggest lower support prices?

7 ... Laughter ...

8 MR. LYNG: Gary Seevers says he will.

9 ... Laughter ...

10 MR. SEEVERS: I'm not a member of Congress though.

11 MR. LESHER: I think the issue really is more, instead
12 of increasing or lowering price supports -- we went through a
13 period in the seventies when there was exponential growth in the
14 export market. The world economies were growing four and five
15 percent and everyone was doing well, the producers were buying
16 seed and fertilizer and so on. And the export market was going
17 in a big way. That's something we weren't doing ten or fifteen
18 years ago.

19 But, when you get into the situation where you need
20 price supports on grain and dairy and other commodities, the
21 issue is really a kind of flexibility in the programs that you
22 need when in fact you are in the export market. And that leads
23 to ups and downs in the world growth rates, exchange rates, and
24 so really the issue is, do we need more flexibility in price
25 supports to match the needs of the times? We look too rigid in

1 dairy and tobacco and it points up the problem.

2 You can get into too rigid a formula and that's the
3 key. It's not whether to have lower or higher price supports
4 but should they be flexible for the times you are in?

5 MR. SEEVERS: May I make a comment?

6 MR. LYNNG: Sure.

7 MR. SEEVERS: I think we're in a real fix talking
8 about price supports. We went through a long period when we
9 supported for income purposes the market price. Grains have
10 increased since 1975 by two-and-a-half to three times today so
11 we have had a major increase for price supports that support
12 the market price which is relevant for export and export policy.
13 So I think we have a real problem there.

14 MR. LYNNG: Gary, that's the last word.

15 We thank all of you on the panel. I'm sorry we don't
16 have more time.

17 ... Applause ...

18 (Thereupon, at 4:40 p.m., the panel discussion was
19 concluded.)
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